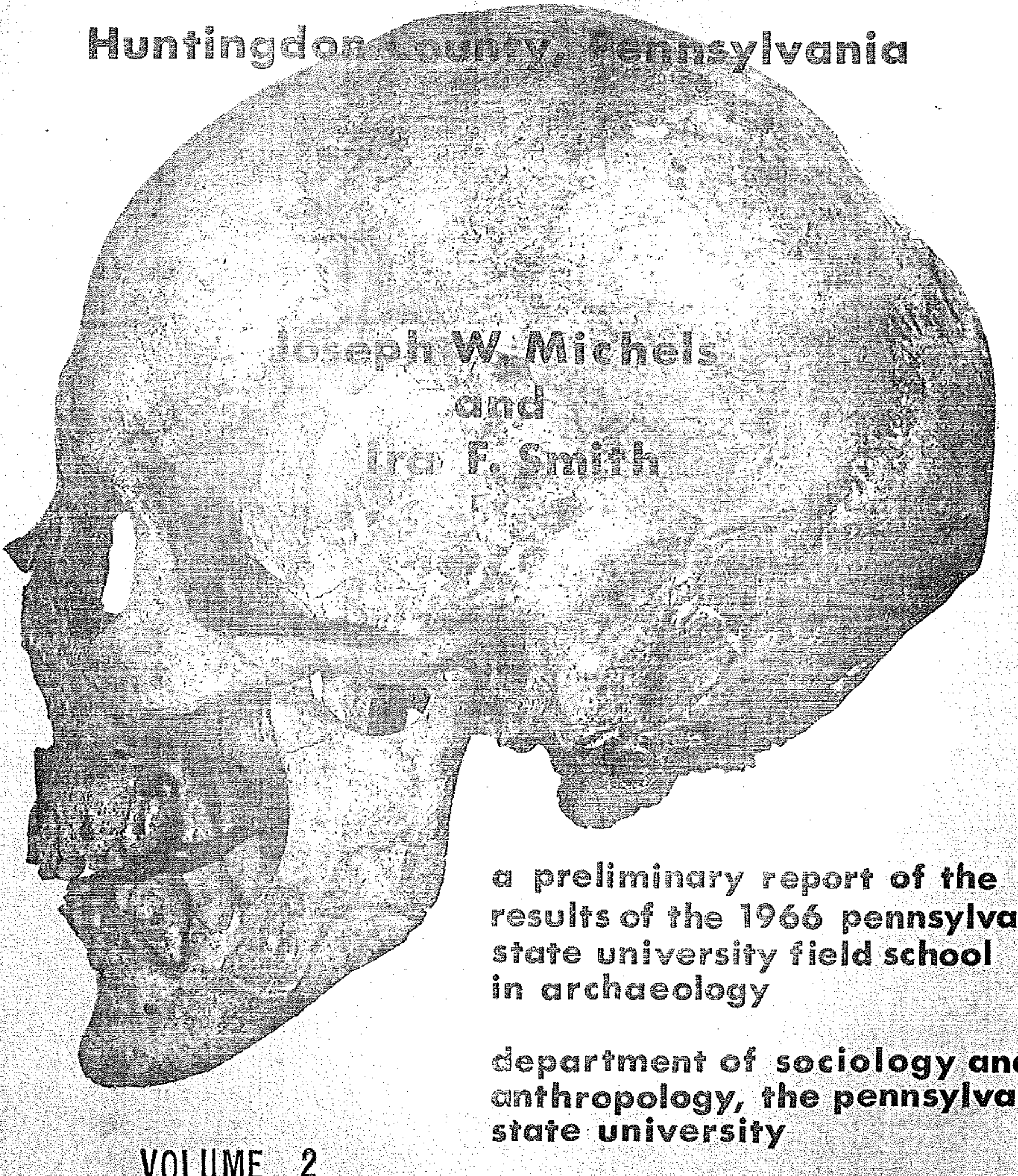
# Archaeological Investigations of
# SHEEP ROCK SHELTER
## Huntingdon County, Pennsylvania



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a preliminary report of the results of the 1966 pennsylvania state university field school in archaeology

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# A PRELIMINARY REPORT ON THE STEATITE VESSELS, CERAMICS AND PIPES OF SHEEP ROCK

by

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ABSTRACT

As true of most Eastern sites, the most abundant artifacts at Sheep Rock are ceramics. The presence of steatite vessels indicates that the pre-ceramic Transitional Period was part of the Sheep Rock chronology. The Early Woodland Period is manifested by Juniata Thick, a new type of which one variety is very similar to Vinette I, another to Marcy Creek Plain, and a third variety, which was the predecessor of Sheep Rock Cordmarked, a local type of the Middle Woodland Period with no affinities to other areas. It is later replaced by Owascoid and Clemson's Island types of Late Middle or Early Late Woodland times. The Shenk's Ferry types are highly similar to those of the "classic" Shenk's Ferry sites in the Susquehanna Basin. These types are replaced by some of the more conservative varieties of Schultz Incised, a Susquehannock type. In addition several sherds which are associated with the Monongahela Basin were recovered. The ceramic elbow pipes of Owascoid types were introduced during the Late Middle or Early Late Woodland times. Pipes appear to have been ceremonial until Susquehannock times when utilitarian pipes appear. Thus a ceramic industry which developed from the influence of other ceramic complexes with local modification is present at Sheep Rock from the Early Woodland to Historic times while steatite vessels are the basis of the hollow cooking-ware tradition.

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In addition, the senior author wishes to give full recognition to the junior authors and their contributions to this report. Mr. Howard Hobbs did the original analysis and investigation of the steatite vessels and Miss Kathryn Crawford described the ceramic pipes. Mr. Ron Rahaman aided the senior author in the description and analysis of the pottery and without his help this section would never have been completed. Last, but not least, is Mr. William Books' contribution entitled "Preliminary Technological Analysis." This section is a fine example of the application of ceramic science to archaeological problems.

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# STEATITE VESSELS

## Introduction

Steatite, sometimes referred to as soapstone, is a mineral form of talc which contains impurities of varying concentration. Talc, a magnesium silicate $[H_2Mg_3(SiO_3)_4]$, is one of the softest naturally occurring minerals and has a hardness of 1 on Moh's Scale. Occurring in the Atlantic Coast Piedmont, it is found from Vermont to Georgia. Aboriginal inhabitants of Eastern North America used steatite to construct vessels or containers which were presumably used for cooking during what is known as the Archaic Period. In Pennsylvania, however, soapstone vessels are assigned to the Transitional Period (1500-1000 B.C.) (Witthoft 1953). It should be noted at this point that steatite and soapstone will be used interchangeably with no difference assigned to them even though mineralogists may prefer to note differences.

Since approximately 75 pieces or sherds of steatite vessels were found at Sheep Rock, it is necessary to investigate the possible sources of the raw material and the vessel forms. It is also necessary to compare the vessel forms with those of adjoining areas and their relative chronological position. Additional notes on repair methods, construction, and function will be made.

## Sources of Steatite

Steatite does not occur naturally in the immediate area of Sheep Rock. Two likely sites at which soapstone was quarried are located near Topton in Berks County and near Christiana in Lancaster County. Witthoft points out that the vessels from the Christiana site were found in various stages of construction indicating that the vessels were manufactured there (1953: 13).

## Description and Comparison of the Vessels (Fig. 1, 2)

Approximately 75 soapstone sherds were found at Sheep Rock. These sherds averaged in thickness from 1.5 to 2.0 cm and vary in color from reddish-grey to grey and black. They also vary in texture from rather smooth (Fig. 1a) to coarse (Fig. 1b). It is assumed that the color is due to weathering at the quarry site and various impurities. The texture seems to be a by-product of manufacture. The shape of steatite vessels is traditionally flat bottomed, with an oblong or round mouth, straight or sloping sides and lug handles. Both Witthoft (1965:20) and Ritchie (1965:172) illustrate these shapes well. The steatite vessels from Sheep Rock seem to be oblong, sloping sides and with a flat bottom. There is no evidence of lug

Figure 1. Steatite Vessel Sherds

a. Steatite Sherd.

b. Rim Profile, Steatite Sherd.

c. Steatite Sherd.

d. Rim Profile, Steatite Sherd.

Figure 1

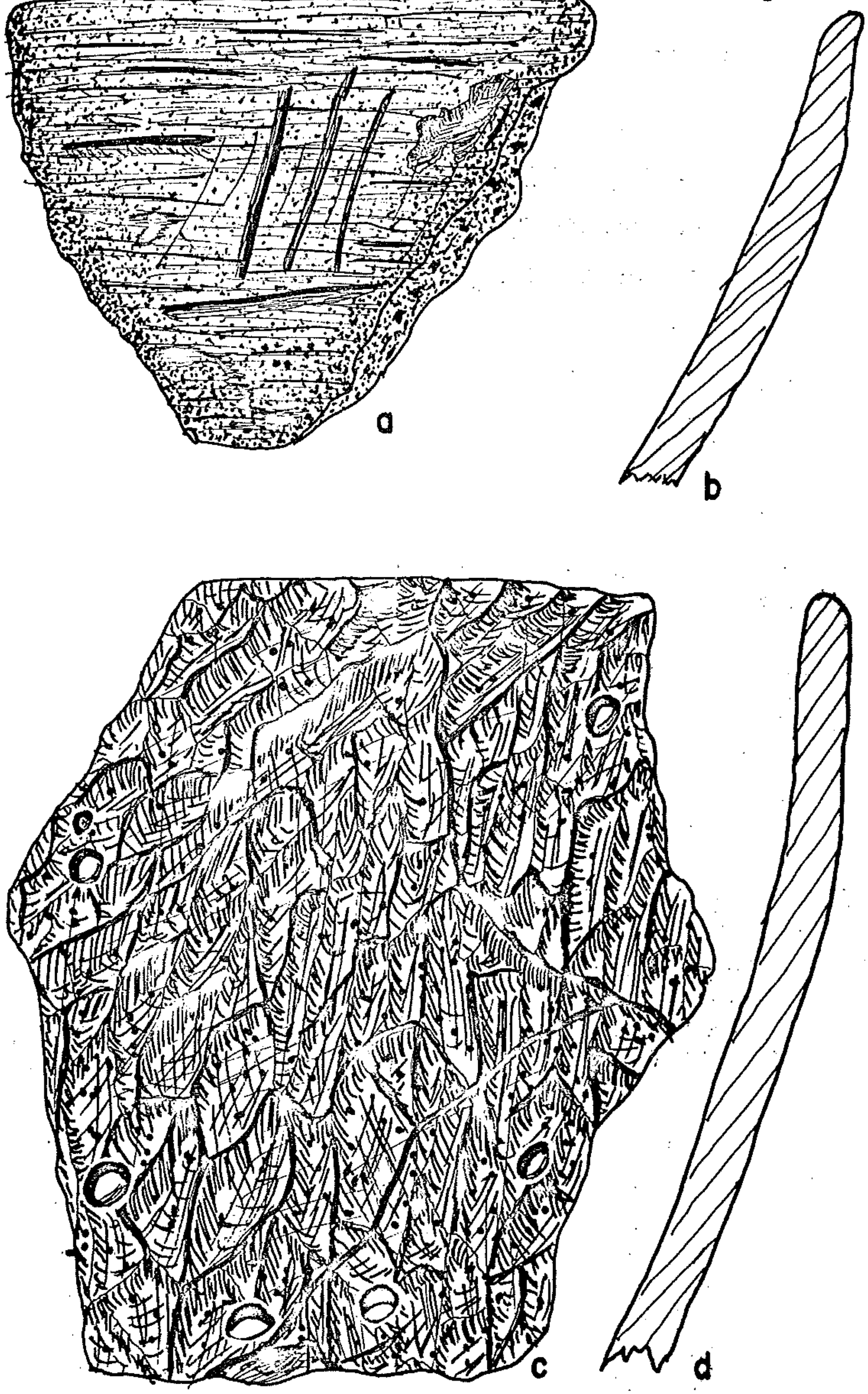


Figure 2. Steatite Vessel Sherds

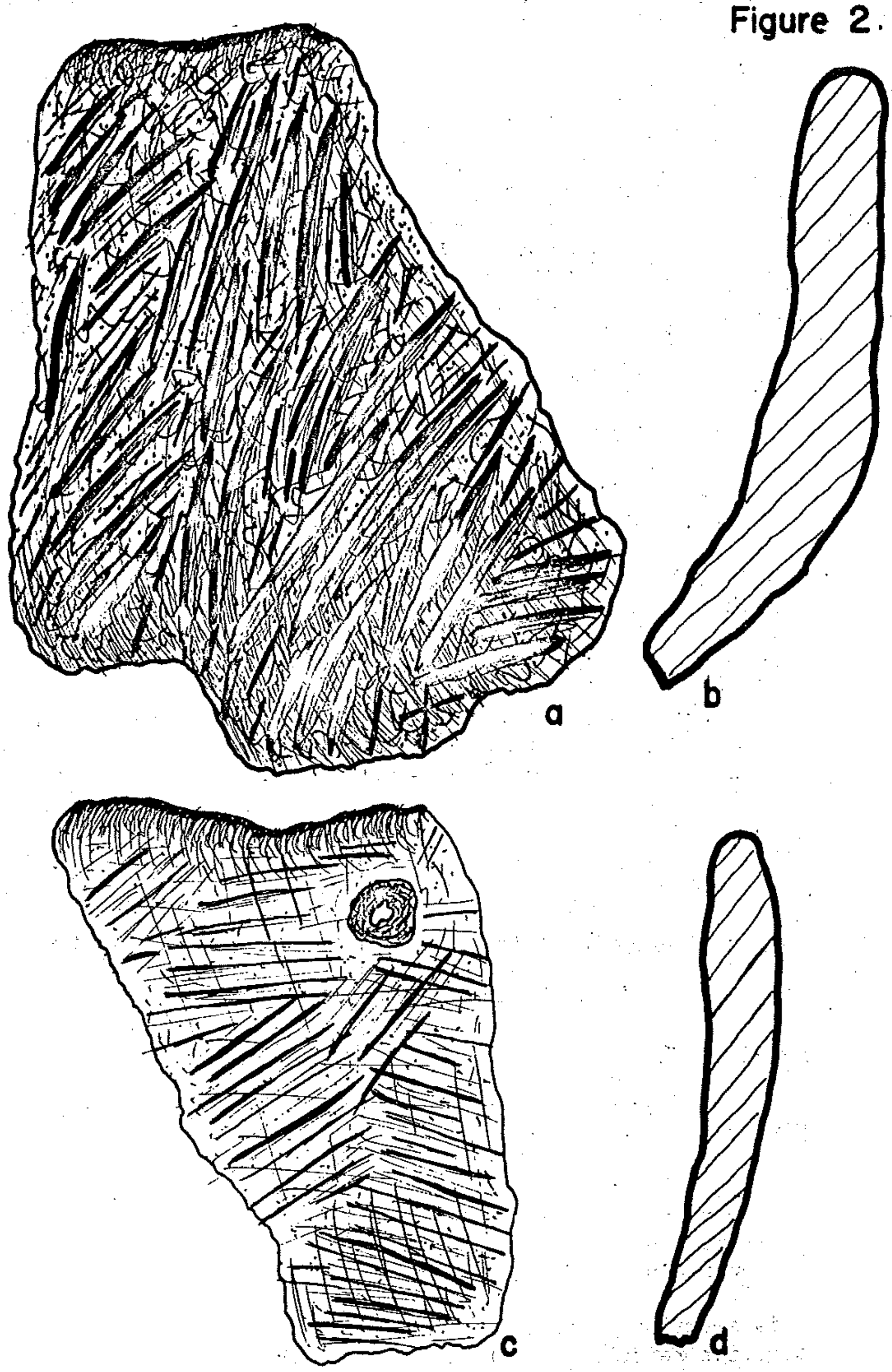
a. Steatite Sherd.

b. Rim Profile, Steatite Sherd.

c. Steatite Sherd.

d. Rim Profile, Steatite Sherd.

Figure 2.



handles. However the data is scanty and further investigation might reveal a more typical pattern.

The steatite vessels of Sheep Rock exhibit grooves or striations which were produced during manufacture (see Fig. 1, 2). Witthoft notes that the vessels found at the Christiana Quarry Site were manufactured with rhyolite picks (1953:14). These picks produce grooves which are more or less random although they tend to be parallel or at an angle to the rim rather than vertical. The inner surface is usually much smoother than the external one and appears to have been ground. This could have been intentional or the result of use. Grooves on the internal surface appear to be more or less parallel to the rim. Another feature of many of the steatite sherds is that the outside is discolored by deposits of carbon. This suggests that the vessels were put into or suspended over a fire.

The steatite vessels appear to have been repaired quite frequently. This is indicated by the presence of "repair holes" (Fig. 2_b_). When a vessel cracked -- steatite is rather fragile -- holes were drilled on either side of the crack and then the pot was lashed or tied together. On the internal surface, the crack may have been caulked with asphaltum or pitch to make the vessel waterproof although none of the vessels found indicate that this was the practice.

The "repair holes" appear to be of two types: conical and cylindrical. Only one example of the conical type was found. It is 2.2 cm in diameter on the external surface and 0.5 cm in diameter on the internal surface. This hole exhibits ridges which are suggestive of having been produced by the use of a chipped stone drill. The second type, cylindrical holes, are straight, with smooth walls, and vary in diameter from 0.7 to 0.9 cm. These holes may have been drilled by using a stick or reed which was rotated in the hole with sand as an abrasive, or they could have been produced by a straight-sided stone drill which was forced completely through the vessel wall.

## Conclusions

The conclusions that can be reached are rather sparce. Witthoft states:

> "Soapstone vessels are of considerable antiquity, not by any means the product of recent Indians, and they are the starting point in the history of hollow cooking-ware in the Eastern Woodlands (1953:14)."

This seems to be the case at Sheep Rock where preliminary investigation reveals that the steatite sherds come from relatively great depths when compared to pottery. In Eastern Pennsylvania and Virginia the earliest pottery type is a steatite-tempered ware which appears to have evolved from the soapstone vessels

(Lucy 1959:28). This type, however, has yet to be found at Sheep Rock and it appears that the soapstone vessels overlap or are the immediate antecedents of the thick-, shale-, and limestone-tempered ware. This ware is similar to Vinette I. Ritchie and MacNeish state that Vinette I is found in the earliest ceramic horizons (1949:100) and, therefore, it is assumed that the steatite found at Sheep Rock represents the earliest type of imperishable containers known at that site.

## CERAMICS

### Introduction

Potsherds, those almost indestructible pieces of pottery, have been called the "Handmaiden of Archaeology." Chronologies are based on them and trade and diffusion have been traced by their use. At Sheep Rock, as is true of most Eastern sites in the United States, the most abundant artifacts are potsherds. Over 2700 were found at Sheep Rock during the seven years of excavation and they were generally restricted to the upper layers of the site. It is our purpose in this preliminary report to describe the pottery found at Sheep Rock and to point out relationships with similar pottery found in the surrounding areas. Although the main goal of this chapter is description, several interesting conclusions have been reached concerning temper types, porosity, modulus of rupture and also a possible source of temper material. An experiment dealing with the method of manufacture was conducted. All of these points will be discussed later in the report.

The pottery from Sheep Rock was typed by the visual inspection of distinguishing characteristics. These distinguishing characteristics are referred to as "modes" which are defined as any divisible attribute of manufacture, decoration, technique, design, or form (Rouse 1939:11-12). The next level of complexity is the variety. A variety is defined as a group of attributes or modes which can be distinguished from a type by their significant clustering and exhibit a more restricted areal and temporal distribution than the type. This is an arbitrary division which is not easily defined. In other words, a variety cannot differ too greatly from the type or it becomes another type and a type always has a greater spatial and temporal distribution. To illustrate the variety concept, we shall take a hypothetical clustering of modes of Shenk's Ferry Incised. We note that examples found in the Juniata Valley are tempered with angular chert and those from the Susquehanna Valley are tempered with gneiss. These vessels still retain the general design, vessel form, etc. but do have a difference in temper which are restricted spatially. We then have two varieties which are restricted in space but still conform to the type concept.

The definition of types becomes especially difficult in Pennsylvania because most of the types are composites of various varieties. Phillips defines a type as "...the sum total of the established variety and all other varieties" (1958:119). However, there are no established varieties for Pennsylvania with a few exceptions. Phillips equates "type" with the ceramic cluster of Wheat, Gifford, and Wasley (1958:118). The Southwestern ceramic cluster is composed of one type and its varieties (Wheat, Gifford, and Wasley 1958:38). Phillips objects to this term and substitutes "type" on the grounds that the use of "and its varieties" implies a dependence of the variety upon the established type. He proceeds to point out that a variety is "...neither included in, dependent upon, nor inferior to..." (1958:118) the established variety (or type). In other words, a variety is a local manifestation (temporal and/or spatial) of cultural concepts shared with other peoples. Phillips also points out that "Most of our types (Eastern) are more like clusters whose varieties are often referred to but seldom defined as such" (1958:118). Thus, by using the methods established by Phillips and Wheat et al., much more specific information is implied and hopefully a better understanding of temporal and spatial relationships is obtained. For example, by using the term "Shenk's Ferry Incised var.(iety) chert temper (a hypothetical case) we can denote a variety of Shenk's Ferry Incised which is found in a restricted area (the Juniata Valley) and confined to a limited vertical segment of the Sheep Rock deposit. We may thus deduce that a group of people in a specific area and time while participating in a widespread cultural tradition were at least partially distinct.

The next higher combination in the Wheat-Gifford-Wasley system is the "ceramic system."

> "A 'ceramic system' is a grouping of type clusters [types in Phillips' terminology] which are related in design style, or surface manipulation when present, vessel form, and general technology (broadly speaking a class of pottery), and which range over a wide area, that are roughly contemporaneous" (Wheat, Gifford, and Wasley 1958:40-1).

This almost implies a horizon as defined by Willey and Phillips (1958) but some ceramic systems span a great length of time and so are not qualified for the term horizon. The widespread relationships of Juniata Thick are a perfect example of the relation of a type to a ceramic system. The relationships between the Early Woodland types of "thick" pottery have been pointed out (Ritchie and MacNeish 1949:100). Juniata Thick is obviously part of this system but it is much more restricted to an area in Pennsylvania.

## Preliminary Technological Analysis

In this preliminary analysis several indicators of technology were investigated. These were porosity, modulus of rupture or tranverse breaking strength, and temper. Temper was broken down into material, size and shape of particles, and per cent by weight.

Assuming that high porosity, low modulus of rupture, and gross temper size imply an early stage of technological development, while on the other hand, low porosity, high modulus of rupture, and medium-sized temper indicate an advanced degree of technology, it was hoped that these tests could be used to establish an approximate chronology of Sheep Rock pottery, as well as to check on the advancement of technology when the chronology is established by stratigraphy and artifactual associations.

While examining the data, it was discovered that the test results could be used to find sherds that were mistyped and to give a good indication as to where they should be placed.

The first series of tests was designed to determine the apparent porosity of the pottery. Porosity of ceramic ware is defined as the ratio of the volume of pore space to the total volume of the sample. True porosity, which is the total pore space of a piece, is very difficult to determine and is closely approximated in low-fired pottery by the apparent porosity. This is correct because low-fired ware lacks the vitrification necessary to seal off the majority of the pores. It should be understood that when the term porosity is mentioned in this paper, the writer means apparent porosity.

It determining the porosities of the pottery sherds, two variations of one procedure were used. The dry sherds were weighed on an analytical balance and saturated by boiling in distilled water for two hours. The boiling pan was equipped with a screen to prevent contact of the samples with the bottom, thus reducing the chance of weight loss by abrasion. After boiling, the pieces were cooled in water, wiped with a damp paper towel to remove excess surface water and reweighed. Finally the volumes were determined. Here is where the variation became necessary.

In the first series of tests, the volumes were calculated from water displaced from an overflow beaker into a graduated cylinder. It was discovered that results would vary as much as $\pm 0.3$ cc from a given value. This method had two sources of inherent error: number one, reading the volumes, and two, incomplete overflow. Consequently, these results were totally rejected. The problem of inconsistent volumes was overcome by calculating suspended weights in a water-filled beaker of known weight. Since the weight of beaker and water would increase by the weight of the volume of water displaced, the volume could then be calculated by subtracting the suspended weight from the saturated weight. Of course this was done on the assumption that water has a density of exactly one gram per cubic centimeter.

Porosity was then calculated from this formula:

$$P = \frac{\text{sat.} - \text{dry}}{\text{sat.} - \text{sus.}} \times 100$$

where

P = per cent apparent porosity

sat. = weight of saturated sample in grams

dry = weight of dry sample in grams

sus. = weight increase of beaker and water in grams

The principle sources of error in this procedure are: obtaining complete saturation of the sherds and porosity values being lowered by the cutex applied over the accession numbers. The latter one was ignored on the basis of practicality and on the assumption that all sherds had approximately the same amount on their surface. Since all samples were boiled for two hours, the lack of complete saturation should not have affected the relative results.

The number of samples is far from being statistically acceptable, but the time element had to be considered as well as the number of sherds available, i.e., possibility of destruction.

In examining the data recorded on the porosity tests, all indications are that porosity can be a very valuable tool, when accompanied by temper analysis, to differentiate pottery types and to aid in finding mistyped sherds. As an example, take the results for the D-series (see Table 1). Type D, with an angular chert temper, has a median value of 14.4% and type $D_1$, with a rounded quartz temper, has a median value of 23.8%.[1] Type $D_3$ has a median value of 14.3% and contains angular chert temper. From this one can infer that types $D_1$ and $D_3$ are probably one and the same type. Furthermore sherd number 1234 within type D has a porosity much different than the others in that type. Closer inspection reveals that this sherd has the rounded quartz temper as does type $D_1$. This sherd has a porosity of 21.2% which is definitely of the same magnitude as those in $D_1$. Thus, the conclusion that this sherd was in the wrong type and should be placed in type $D_1$. The same type of inferences could be made about the sherds in aledged type $D_2$, which appears to contain sherds from both types D and $D_1$. It should be noted that this group has since been retyped and therefore the data in Table 1 is not correct to type.

The next series of tests were designed to determine the modulus of rupture. The modulus of rupture, or transverse breaking strength, can be used to measure the resistance to breakage of a ceramic vessel. It is a complicated property of ceramic ware and is influenced by many things, a few of which are: size and shape of non-plastic material (temper), texture of paste, technique of manufacture, rate of drying, etc. The results of these strength tests afford a practical method of estimating the serviceability of pottery.

In the tests a four point loading apparatus was used. This system gives a more evenly distributed load than does the double-knife-edge apparatus, and reduces uneven strains that develop just before rupturing. The rectangular samples, prepared by sawing, were rested on two blades, one inch apart. Each blade had cuts beveling towards the center, leaving a point on each end. The test piece rested on the four points.

The breaking load was applied perpendicular to the surface of the sample by a rod attached to a lever arm mounted on an axle. The downward force was applied by the collection of water, at a constant rate (15 gm per second), in a container suspended from one end of the lever arm. An electric device timed the duration of water flow until the sample ruptured. At the same time it operated a valve that stemmed the flow of water. The mechanical advantage of this apparatus was given as ten.

The moduli of rupture were calculated from the formula:

$$M = \frac{3\,P\,l}{2\,b\,d^2}$$

where

M = modulus of rupture in kg. per $cm^2$.

P = breaking load in kg.

l = distance between knife edges in cm.

b = width of sample in cm.

d = thickness of sample in cm.

Since the breaking load was applied in a rather unique manner, the above formula had to be modified slightly. P had to be replaced by P = rate water flow x time x mechanical advantage = 10 Rt. After the substitutions, the whole formula reduced to:

$$M = 0.5715\,\frac{t}{bd^2}\ \text{kg/cm}^2.$$

The principle sources of error in this experiment are inherent weaknesses in the samples and those introduced by the preparation of the samples.

Unfortunately, the sherds tested for modulus of rupture were body sherds and only from five gross types, defined mainly from temper and exterior markings. There appears to be no exact method of correlating these results with those of the porosity tests for the types defined from the decorated sherds. However, the tests show that modulus of rupture has much potential for future work.

The sherds with the highest strength, median value of 70.1 $kg/cm^2$, were shell tempered and were probably the latest pottery. Their strength was to be expected because of the platy texture of the temper which gives the ware resistance to cross fracture. This fact might indicate that the potters preplanned this result and could indicate a relatively high degree of technological advancement. The shell-tempered ware was also the thinnest tested, median thickness of 0.63 cm.

Second in strength was a quartz-tempered type with the majority of the particles angular. Some of the grains were iron stained, except on fractured faces, which implies that this quartz temper was prepared by crushing. The particles are not of a uniform size; hence, they were probably not sorted. The angular grains would form a good physical bond with the clay and make the structure a relatively strong one.

Thirdly, was another quartz-tempered pottery. This time the particles were more rounded and were iron stained all over, indicating a non-crushing preparation. The size is not at all uniform, implying that they were not sorted. However, the smaller grains could have occurred naturally in the clay.

The next in order of descending strength came a rather crude type of pottery. The temper is rather large pieces of silty red shale; which, incidently, appear to be of the same variety of red shale that is found in the Catskill formation across the river from Sheep Rock.

Finally the weakest pottery tested was the thickest, median thickness of 1.02 cm, and contained the largest pieces of temper. The temper consisted mainly of large pieces of chert and limestone or dolomite. Since heavily-tempered pottery breaks more easily than does moderately-tempered ware, it appears that the early potters realized this and tried to compensate by making thick vessels, rather than reduce the temper size. One might infer, and probably with some degree of accuracy, that this pottery represents one of the earliest at Sheep Rock.

In looking over the moduli of ruptures, in conjunction with temper, it seems that the potters were aware of some relationship between strength and size and shape of temper, although one cannot be certain. At any rate, with more research on the modulus of rupture, along with porosity and temper data, a good relationship between technological development and time could probably be established.

The first step in temper analysis was to determine the type of material. The tempers used were quartz (megacrystalline), chert (micro-crystalline), silty red shale, limestone, dolomite, and shell (mussel). To aid visual identification, both binocular and petrographic microscopes were employed. Slides were prepared for the petrographic mircoscope by crushing the temper with an agate mortar and pestle. The powder was then dusted onto a glass slide covered wtih a drop of Canada balsam and was then covered with a thin pyrex cover glass.

Limestone and dolomite were tested in 3N HCl, the limestone effervesced rapidly and the dolomite only slowly.

Rather than measure the particle size directly with vernier calipers, a method using a series of four standard screens was devised. The screens were chosen to cover particle sizes ranging from 3.36 mm down to 1.168 mm, which would cover "granules" to "medium" on the Wentworth scale of particle sizes. It was felt that this range would adequately cover the sizes encountered in the pottery from Sheep Rock.

A sample was broken from a sherd, weighed, and gently crushed, so as not to reduce the temper size. The crushed material was then fed into a series of four screens and the weight of material on each screen was recorded. It was further noted which screen contained the greatest amount of temper in comparison to the fired clay particles. If one checks the weights recorded from the screens and pan, it will be noted that a weight loss was incurred. This is accounted for by the material adhering to the mortar and paper while transferring from mortar to screens and from screens to balance. This loss should not affect the results because the material was very fine clay particles and not temper.

By observing the screen with the greatest amount of temper, the average particle size could be directly computed. This also afforded a means of obtaining a rough approximation of per cent temper by weight.

If one makes the gross assumption that the material on the screen is all temper, which could be partly justified by saying that the clay would make up approximately the same weight as the temper on the other screens, the per cent temper could be calculated by dividing the weight on the screen by the sample weight and multiplying by one hundred (see Table 3).

Other methods could have been used for the separation of plastic (clay) and non-plastic (temper) materials, such as separation by dense liquids. Time did not permit trials of other methods, although it is certain that a more accurate method is readily available.

Per cent by weight of shell tempering was calculated in a slightly different manner. A chemical reaction between 3N HCl and the $CaCO_3$ of the shell was utilized. The reaction is:

$$CaCO_3 + 2HCl \text{ (excess)} \longrightarrow CO_2\uparrow + CaCl_2 + H_2O$$

The assumption was made that no other material besides the shell would react with the acid. This assumption is not absolutely correct, but the approximation is probably a fairly reliable one.

The chloride formed is water soluble and the carbon dioxide is lost as a gas, leaving behind the solid clay material. A filter paper of known weight was used to separate the solution from the clay and was washed several times. By gently heating the filter paper, the moisture was driven off and the per cent shell temper by weight was calculated.

The weight loss (temper) was calculated by subtracting the weight of the filter paper and residue from the weight of the filter paper and sample. Per cent temper was then calculated as follows:

$$\%\text{ temper} = \frac{\text{weight of clay}}{\text{weight of sample}} \times 100$$

Although the series of tests completed in this preliminary analysis of the Sheep Rock pottery are not statistically significant, they do give a fair idea of what to expect from future results and may form a foundation for future methods of analysis.

## Typology

The following is a description of the types found at Sheep Rock. In cases where the potsherds were obviously related to types that have been previously described by other authors, they were simply described. If they appeared to be somewhat different than the type description but not significantly so, they were described as varieties of the established type. In some cases it was felt that a group of potsherds differed enough from previously described types to be classed as new types. The major problem of interpreting ceramics in this preliminary report is that there is no complete stratigraphic record at the time of this writing. Without this record it is nearly impossible to establish a chronology for the site. Cross dating with adjacent areas is possible and has been applied to some extent, but for reasons of objectivity and accuracy this method was not employed extensively in the preliminary typing. However, as soon as the stratigraphy is established the ceramics recovered from Sheep Rock will be seriated and a chronology will be derived. Another problem which plagues the ceramic classifier is "merging of types." Since any ceramic tradition is evolving or changing through time, it is often very difficult to divide the immediate predecessors of a variety from the variety itself. One can imagine the problems involved in making distinctions taxonomically between the model for cars of the last ten years. The pottery is described in the typical manner by the following criteria: paste, surface treatment, decoration, and form. These categories are further subdivided.

Paste, which is the description of the clay and aplastic materials of which the vessels are made, is subdivided into method of manufacture, color, modulus of rupture, and temper. We have excluded descriptions of the clay and its texture, and the hardness of the clay. Because of the complex analysis required to determine and describe the composition of the clay and its texture (X-ray diffraction, petrology, etc.), these measurements were not employed. It is recommended that they be incorporated into future reports when time and equipment are available. Hardness was not utilized because all of the sherds which were tested with readily available materials and correlated with Mohs' hardness scale indicated a range from approximately 2.0 to 3.0 and appeared to be of little significance. It should be noted, however, that there are several tests used by metallurgists which test hardness by penetration and are more accurate. These may be used in the future.

The method of manufacture used at Sheep Rock is assumed to have been coiling, although a great number of authors have stated that modeling by paddle-and-anvil technique was used almost exclusively in the Northeast. An experiment was conducted to try to establish the method of manufacture. The senior author had noted that when wedging clay to prepare it for modeling all fold lines disappeared. This is because the platelets of clay align themselves in a parallel manner. It was postulated that paddling, which is a very common surface treatment in this area, would perform the same function as wedging, that is, the force of the blows would cause the platelets to become parallel to one another. Therefore an experiment was conducted by coiling three "walls" of clay from "Plastic" modeling clay. One "wall" was paddled with a board and the other was smoothed by hand. The third was left unmarked. After all the marks on the first two "walls" were obliterated they were cross-sectioned. It was noted that in the "wall" which was paddled all coil lines were obliterated while those on the smoothed "wall" were still apparent. Figure 3 illustrates this. It is therefore proposed that a ceramic vessel which is paddled could have been constructed by either modeling or coiling and a cross section will not reveal the method of manufacture.

It should be noted that Witthoft (1959:43) states that

Schultz Incised was not coiled but rather it was modeled. With this historic pottery modeling is entirely possible if there is an ethnographic reference to this practice. Although he does not cite any such reference, one does exist for the Hurons of the Great Lakes. Kinietz quotes Sagard as follows:

> "But as for our Huron and other peoples and sedentary nations, they had (as they still have) the usage and the skill of making earthen pots, that they bake on their hearth; these are very good and never break in the fire, even though there is no water in them; but yet they cannot withstand humidity or cold water for long without softening and breaking at the least blow that is given them, otherwise they last a very long time. The Indian women make them, taking suitable earth, which they clean and knead very well, mixing in it a little sandstone, then the mass being reduced to a ball, they make a hole in it with the fist, which they enlarge continuously while beating it inside with a little wooden paddle, as much and as long as is necessary to complete them; these pots are made without feet and without handles and are entirely round like a ball, except the mouth which projects out a litte." (1965:47)

Thus from the data of the experiment and the above reference it is logical to conclude that it is often impossible to determine the method of manufacture from the finished product if it has been paddled and is of very little value in making divisions into "types."

Color is simply the observable color of the potsherd. There was no attempt to define color for the poor firing control did not seem to produce any distinctive colors. All of the pottery examined varied from tan or buff to grey or black.

The basic material of ceramic vessels is, of course, clay. It appears that the clays used at Sheep Rock were derived from local sources. This point was not investigated because the high water of the dammed Raystown River covers any local clays that would have been available to the inhabitants of Sheep Rock. The source of the aplastic or tempering material also appears to be local, probably from river cobbles. This is further evidenced by a red sandstone conglomerate cobble which was recovered during the excavation. It was noted that the crushed conglomerate was found to be quite similar to the tempering material in the rounded-quartz-tempered sherds. Figure 4 compares a sandstone conglomerate to a quartz-tempered sherd. It should be noted that several examples of these sandstone conglomerates were found. The source of shell tempering is obviously derived from the local species of fresh water mussels. The tempering material is described by its size, i.e., the average size of the particles, the material according to the Wentworth Scale

(Wentworth 1922), and the texture of the aplastic. Additional data on temper and other aspects of paste are discussed in the technological analysis.

Surface treatment is defined as the method used to finish the surface of the vessel. In most cases at Sheep Rock the surface of a pottery vessel was cordmarked by a paddle wrapped with cordage. This technique was also used to shape the vessel during the final stages of construction. Cordmarking must have been aesthetically pleasing to the aboriginal craftsmen since it was not removed. Cordmarking seems to appear almost always on the exterior surface, whereas it was often removed from the interior. Since the Indians knew of techniques to remove cordmarking it seems logical to assume that they were pleased with the appearance of the treatment. There are a great number of variables in cordmarking, such as the dryness of the clay, the size of the cord, the force with which the vessel was paddled, etc. so that all cordmarked sherds were classified according to the type of paste used, which is generally defined by temper. Fabric-impressed pottery occurs but it is highly variable and is classed as a "ware." There were cordmarked sherds which possessed vessel rims. In such cases cordmarking was assumed to be the decoration motif for a complete vessel, but the cordmarked sherds which did not exhibit rims were assumed to be body sherds.

Decorations are the embellishments added to the surface of a vessel for asthetic purposes. At Sheep Rock most decorations were placed on a vessel after the cordmarking had been applied, but before the clay had become leather hard from drying. The designs are all plastic and consist of incised lines, punctating, and stamping with the edge of a cordwrapped paddle or stick.

The form of a vessel is divided into lip, rim, neck, body, base, and shape. The lip is the upper edge of the rim and is usually rounded or square in cross section. The rim is generally the upper three centimeters of the vessel and may be straight, incurving or outflaring. If an addition strip of clay was added to the rim or the rim was extruded it may be overhanging or thickened. The neck is that portion of the vessel between the shoulder and the rim of the vessel and is generally smaller in diameter than either the orifice or the body. The shoulder of the vessel is the sloping junction between the neck and the body. The body and the base are simply the shapes of those portions of the vessel. At Sheep Rock the two major shapes of vessels are an open-mouth pot and a jar-shaped form. The jar form has a constricted neck and at times may have a collar. See Figure 5.

Of the 2700 sherds found at Sheep Rock, 635 were decorated and divided into "types."

## Conclusions

At Sheep Rock, the first "ware" tradition is associated with Juniata Thick and is associated with the Early Woodland Period. This "ware" could be named a "Gross Limestone Ware." The tempering remains more or less limestone although particle size becomes much smaller relatively speaking during Middle Woodland Times in the form of Sheep Rock Cordmarked and it is felt that this is the product of an in situ evolution of the ceramic technology. There appears to be two traditions during the later Woodland Times, one is the round-quartz-tempered "ware" associated with the Owascoid types and the other is an angular chert temper associated with the more southerly Clemson's Island and Shenk's Ferry types. Both of these traditions are replaced by the shell tempered "ware" of the Historic Period. This shell tempered "ware" should not be confused with the westerly types of shell tempered pottery associated with the Monongahela Basin which appears to have a different locus and history than that utilized at Sheep Rock. We feel, however, that with the suggestions and implications pointed out in the technological analysis these points can become somewhat refined.

The employment of the type-variety concept is believed to be one of the first in Eastern Pennsylvania and it most certainly can be used to locate more specific culture groups in both time and space. With the modification of some of the classical descriptive criteria, such as method of manufacture and color, and in combination with the type-variety concept, the preliminary types discussed for Sheep Rock are reasonably well established.

Figure 3. Ceramic Manufacture

a. Coil

b. Coiled "Wall"

c. Cross Section of Coiled "Wall"

d. Partially Paddled Coiled "Wall"

e. Cross Section of Partially Paddled Coiled "Wall"

f. Completely Paddled Coiled "Wall"

g. Cross Section of Completely Paddled Coiled "Wall"

h. Smoothed Coiled "Wall"

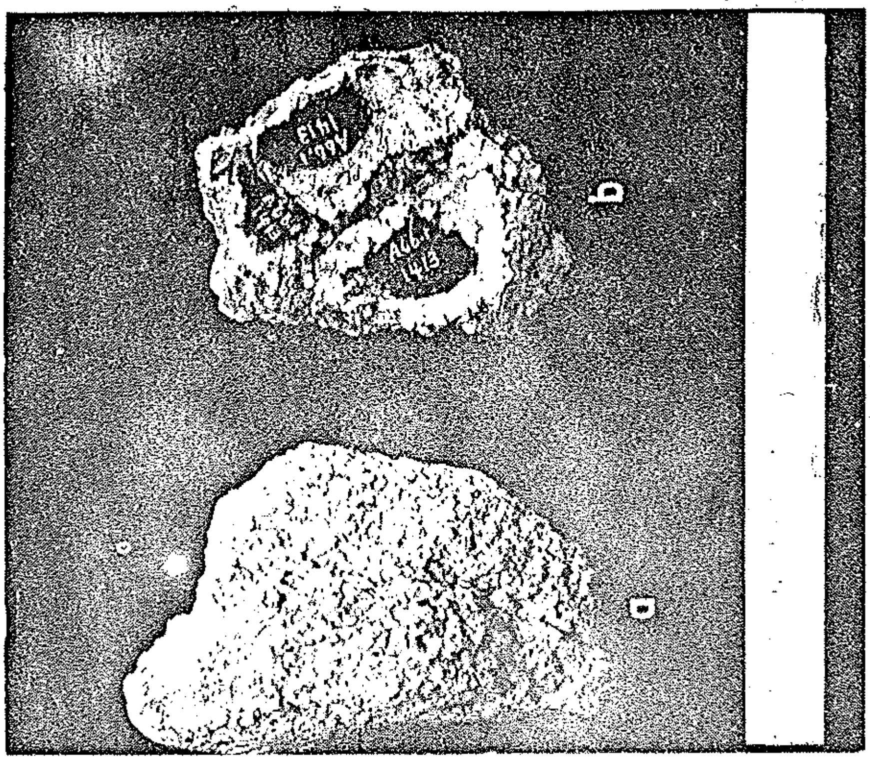
i. Cross Section of Smoothed Coiled "Wall"

Figure 4. Possible Temper Source Compared to Quartz Tempered Potsherd

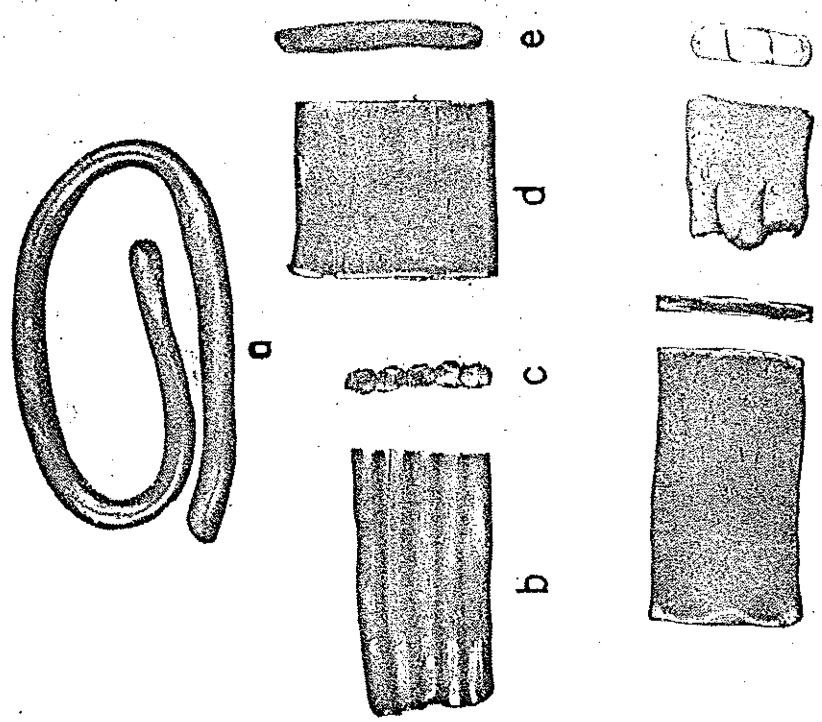
a. Sandstone Conglomerate

b. Quartz Tempered Sherd

Figures 3 & 4




4




3

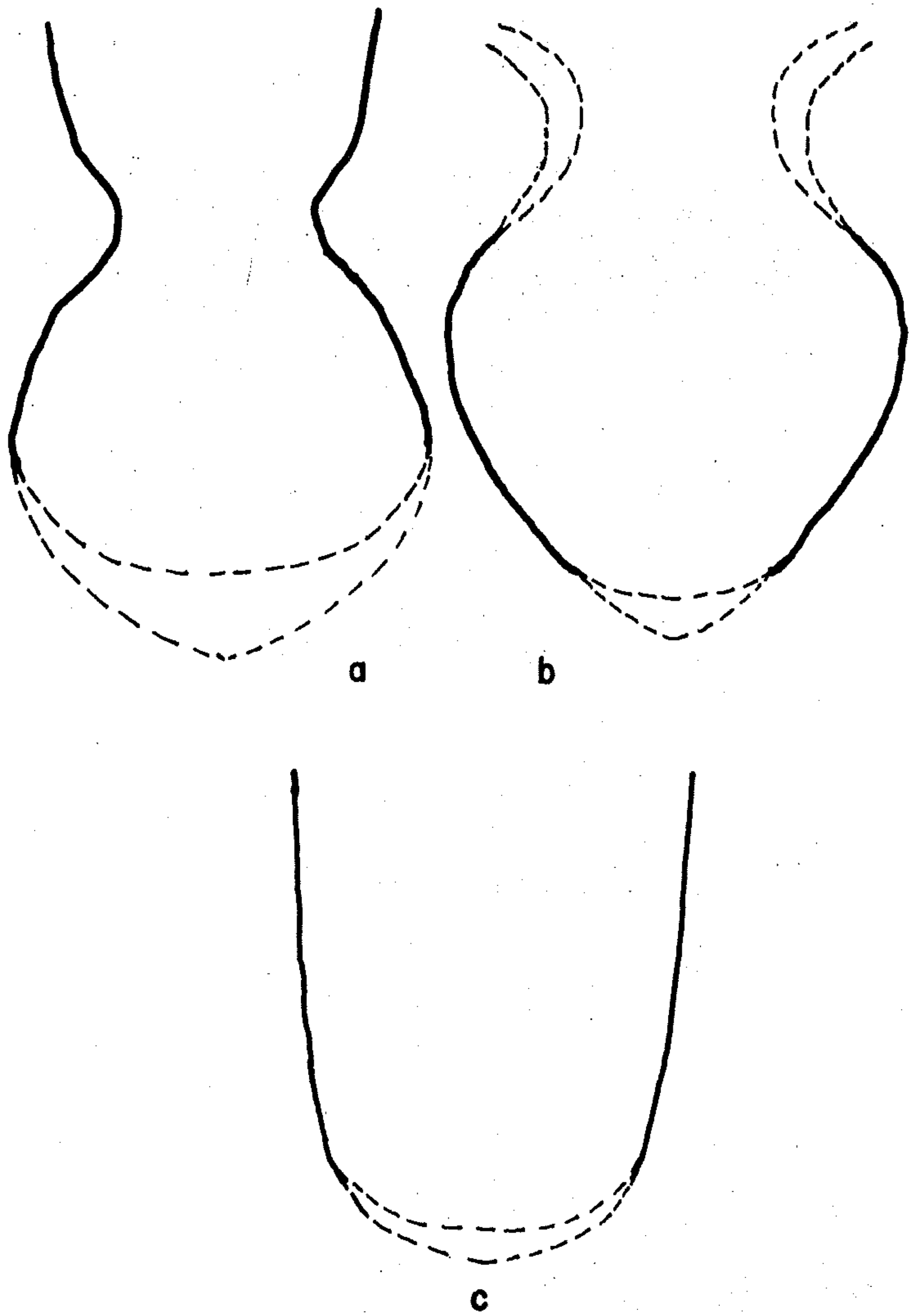
Figure 5. Vessel Forms

a. Collard Jar Form

b. Jar Form

c. Open Pot Form

Figure 5



| | Sherd No. | Sat. Wt., gm. | Dry Wt., gm. | Volume, cc. | Sus. Wt., gm. | $P = \frac{Sat.-Dry}{Sat.-Sus.} x100$ | |
|---|---|---|---|---|---|---|---|
| Type A | 3129 | 16.802 | 14.749 | 8.4 | 8.4 | 24.4% | |
| | 2601 | 7.313 | 6.456 | 3.8 | 3.5 | 22.6% | |
| (Schultz | 1966 | 14.582 | 12.758 | 6.7 | 7.9 | 27.2% | median 24.2% |
| Incised) | 1344 | 9.182 | 8.042 | 4.7 | 4.1 | 24.2% | |
| | 1343 | 12.781 | 11.280 | 6.7 | 6.1 | 22.4% | |
| Type A Lip I | 1536 | 24.160 | 20.745 | 12.5 | 11.7 | 27.3% | |
| (Schultz Incis- | 1359 | 13.702 | 11.982 | 7.1 | 6.6 | 24.2% | |
| ed var. Side | 2601 | 9.178 | 8.171 | 4.9 | 4.3 | 20.6% | median 22.4% |
| Punctate Lip) | 1821 | 14.021 | 12.163 | 7.3 | 6.7 | 25.4% | |
| Type A Lip II | 1532 | 20.863 | 18.378 | 10.9 | 10.0 | 22.8% | |
| (Schultz Incis- | 1362 | 14.877 | 13.015 | 7.7 | 7.2 | 24.2% | |
| ed var. Notch- | 4474 | 8.258 | 7.266 | 4.6 | 3.7 | 21.6% | median 22.6% |
| ed Lip) | 1525 | 20.033 | 17.690 | 10.5 | 9.5 | 22.4% | |
| Type B | 4907 | 9.308 | 8.381 | 4.7 | 4.6 | 19.7% | |
| (Shenk's Ferry | 1516 | 11.300 | 10.446 | 6.1 | 5.2 | 14.0% | |
| var. Multiple | 4907 | 5.451 | 4.910 | 2.8 | 2.7 | 19.3% | median 17.9% |
| Banded) | 1510 | 7.247 | 6.620 | 3.8 | 3.4 | 16.5% | |
| Type C | 1330 | 7.297 | 6.276 | 3.7 | 3.6 | 27.6% | |
| (Clemson's Is- | 1334 | 8.967 | 7.874 | 4.7 | 4.3 | 23.3% | |
| land Platted) | 1287 | 6.735 | 5.797 | 3.5 | 3.2 | 26.8% | median 26.0% |
| | 1325 | 16.198 | 14.103 | 8.3 | 7.9 | 25.2% | |

POROSITY DATA OF CERAMICS

Table 1

Table 1

| | Sherd No. | Sat. Wt., gm. | Dry Wt., gm. | Volume, cc. | Sus. Wt., gm. | $P = \frac{\text{Sat.} - \text{Dry}}{\text{Sat.} - \text{Sus.}} \times 100$ | |
|---|---|---|---|---|---|---|---|
| Type $C_2$ | 1326 | 14.436 | 13.177 | 7.5 | 6.9 | 23.3% | |
| (Clemson's Is- | 1029 | 8.844 | 7.625 | 4.5 | 4.3 | 27.0% | median 27.0% |
| land Platted) | 1020 | 23.055 | 19.874 | 11.9 | 11.1 | 26.8% | |
| Type D | 3252 | 11.363 | 10.474 | 6.4 | 5.0 | 13.9% | |
| (Owasco Corded | 2726 | 13.763 | 12.620 | 7.4 | 6.4 | 15.5% | median 14.4% |
| Horizontal) | 1546 | 9.257 | 8.524 | 5.1 | 4.2 | 14.4% | |
| | 1234 | 9.504 | 8.458 | 4.7 | 4.8 | 21.2%(Rej.) | |
| Type $D_1$ | 1445 | 16.769 | 14.142 | 8.4 | 8.4 | 31.3% | |
| | 1153 | 9.324 | 8.201 | 4.8 | 4.5 | 23.4% | median 23.8% |
| (Mistyped) | 1187 | 5.850 | 5.122 | 3.0 | 2.8 | 24.2% | |
| | 1433 | 5.552 | 4.862 | 3.0 | 2.6 | 23.0% | |
| Type $D_2$ | 1433 | 13.661 | 11.928 | 7.3 | 6.4 | 23.8% | |
| | 1823 | 12.668 | 10.541 | 7.2 | 5.5 | 29.6% | |
| (Mistyped) | 1266 | 12.164 | 11.140 | 6.6 | 5.6 | 15.5% | |
| | 1260 | 14.189 | 12.679 | 7.6 | 6.6 | 19.9% | |
| Type $D_3$ | 950 | 12.575 | 11.531 | 6.7 | 5.85 | 15.6% | |
| | 1428 | 7.545 | 6.967 | 4.1 | 3.4 | 14.1% | |
| (Owasco | 3565 | 24.667 | 22.955 | 13.5 | 11.2 | 12.8% | median 14.3% |
| Platted) | 2726 | 22.935 | 20.740 | 12.2 | 10.7 | 18.0% | |
| | 3737 | 21.478 | 19.922 | 11.7 | 9.8 | 12.9% | |
| | 1809 | 8.139 | 7.513 | 4.3 | 3.8 | 14.5% | |

| | Sherd No. | Sat. Wt., gm. | Dry Wt., gm. | Volume, cc. | Sus. Wt., gm. | $P=\frac{\text{Sat.-Dry}}{\text{Sat.-Sus.}}\times 100$ | |
|---|---|---|---|---|---|---|---|
| Type E | 5552 | 10.769 | 9.676 | 5.6 | 5.2 | 19.5%(Rej.) | |
| (Clemson's Is- | 1313 | 11.347 | 9.849 | 5.9 | 5.4 | 25.4% | |
| land Punctate | 1433 | 13.735 | 11.858 | 7.1 | 6.6 | 26.4% | median 26.4% |
| var. Overhang- | 1186 | 11.159 | 9.494 | 5.8 | 5.4 | 28.7% | |
| ing Rim) | | | | | | | |
| Type F | 1510 | 9.886 | 8.612 | 5.1 | 4.8 | 25.0% | |
| (Owasco Corded | 1510 | 5.427 | 4.777 | 2.8 | 2.6 | 23.2% | median 23.2% |
| Oblique) | 1510 | 9.216 | 8.144 | 4.7 | 4.5 | 22.8% | |
| Type H | 4969 | 5.657 | 4.935 | 2.9 | 2.8 | 24.8% | |
| (Montague In- | 4969 | 4.123 | 3.577 | 2.2 | 1.9 | 24.8% | |
| cised Punctate) | 4888 | 4.312 | 3.707 | 2.1 | 2.2 | 28.8% | median 24.8% |
| | 908 | 8.973 | 7.849 | 4.7 | 4.3 | 23.9% | |
| Type J | 1317 | 9.538 | 8.410 | 4.8 | 4.7 | 29.6% | |
| | 1298 | 18.623 | 16.872 | 9.8 | 8.8 | 17.9% | |
| (Mistyped) | 1154 | 20.684 | 18.645 | 10.9 | 9.8 | 18.7% | |
| | 1288 | 18.800 | 14.499 | 9.9 | 8.9 | 43.5% | |
| Type $J_1$ | 1186 | 11.805 | 10.386 | 6.0 | 5.8 | 23.6% | |
| (Shenk's Ferry | 1511 | 12.919 | 11.412 | 7.0 | 5.9 | 21.6% | |
| var. Complex) | 1786 | 3.779 | 3.457 | 2.0 | 1.8 | 16.1% | |
| | 1518 | 4.390 | 3.963 | 2.3 | 2.05 | 14.2% | |

Table 1

Note: Letters are not type designations as in other data sheets.

| Sherd No. | b=Width, cm | d=Thickness, cm | t=Time, sec | $d^2$ | $M = \frac{.572t}{bd^2}$, $kg/cm^2$ | |
|---|---|---|---|---|---|---|
| $A_1$ | 1.97 | .63 | 30.80 | .397 | 22.2 | |
| $A_2$ | 1.78 | .59 | 40.51 | .348 | 37.4 | |
| $A_3$ | 2.01 | .67 | 40.78 | .449 | 26.2 | median 29.0 |
| $A_4$ | 2.42 | .66 | 53.60 | .436 | 31.8 | |
| $A_5$ | 2.10 | .56 | 102.01 | .314 | 88.3(Rej.) | |
| $B_1$ | 1.38 | .78 | 34.85 | .608 | 23.7 | |
| $B_2$ | 1.74 | .74 | 72.79 | .548 | 43.5(Rej.) | median 23.7 |
| $B_3$ | 2.06 | .89 | 61.15 | .792 | 21.4 | |
| $B_4$ | 1.92 | .72 | 43.53 | .518 | 25.0 | |
| $C_1$ | 2.10 | .59 | 70.34 | .348 | 54.9 | |
| $C_2$ | 1.89 | .62 | 33.72 | .384 | 29.0 | |
| $C_3$ | 1.98 | .60 | 54.62 | .360 | 43.8 | median 54.9 |
| $C_4$ | 1.70 | .43 | 32.20 | .185 | 59.0 | |
| $C_5$ | 1.25 | .58 | 41.60 | .336 | 56.6 | |
| $D_1$ | 1.49 | .52 | 47.93 | .270 | 68.0 | |
| $D_2$ | 1.21 | .39 | 27.45 | .152 | 84.8 | |
| $D_3$ | 1.35 | .40 | 33.30 | .160 | 87.9 | median 70.1 |
| $D_4$ | 1.43 | .50 | 43.91 | .250 | 70.1 | |
| $D_5$ | 1.30 | .50 | 31.70 | .250 | 55.8 | |
| $E_1$ | 1.49 | .95 | 48.91 | .902 | 20.6 | |
| $E_2$ | 1.99 | 1.08 | 94.00 | 1.180 | 22.8 | |
| $E_3$ | 1.52 | .98 | 37.00 | .960 | 14.5 | median 21.7 |
| $E_4$ | 1.99 | 1.02 | 114.39 | 1.040 | 31.2 | |
| $E_5$ | 1.79 | 1.18 | Rejected because of pretest fracture. | | | |

| | TYPE | Sample Wt.* | GRANULE Screen #6 >3.36mm | VERY COARSE Screen #10 >2.00<3.36mm | COARSE Screen #14 >1.17<2.00mm | MEDIUM Screen #40 >.42<1.17mm | Pan Wt.* | Most TEMPER on Screen # | APPROX. % TEMPER by Wt.* |
|---|---|---|---|---|---|---|---|---|---|
| Shenk's Ferry var. Multiple Banded | B | .73 | 0 | .02 | .35 | .25 | .11 | #14 | 48% |
| Clemson's Island Platted | C | .88 | 0 | 0 | .20 | .41 | .12 | #40 | 47% |
| Clemson's Island Platted | $C_2$ | 1.69 | 0 | .10 | .46 | .63 | .24 | #40 | 37% |
| Owascoid Corded Horizontal | D | 1.03 | 0 | .11 | .29 | .36 | .11 | #14 | 28% |
| Mistyped | $D_1$ | .77 | 0 | .16 | .15 | .23 | .09 | #40 | 30% |
| Mistyped | $D_2$ | 1.62 | 0 | .31 | .59 | .34 | .10 | #14 | 30% |
| Owasco Platted | $D_3$ | 2.19 | 0 | .55 | .65 | .50 | .21 | #14 | 30% |
| Clemson's Island Punctate var. Overhanging Rim | E | 1.44 | 0 | .13 | .46 | .52 | .12 | #14 | 32% |
| Owasco Corded Oblique | F | 1.18 | 0 | .31 | .27 | .27 | .06 | #14 | 23% |
| Mistyped | J | 1.89 | 0 | .50 | .53 | .42 | .04 | #14 | 28% |
| Shenk's Ferry var. Multiple Banded | $J_1$ | 1.00 | 0 | .26 | .26 | .25 | .05 | #14 | 38% |

Note: Types A and H are shell tempered and were therefore not included in these tests.
*All Wts. in grams.

TEMPER DATA OF CERAMICS

Table 3

## POTTERY TYPES ASSOCIATED WITH THE SUSQUEHANNA RIVER BASIN

### Juniata Thick var. Interior Cordmarked (Fig. 6a-f)

PASTE:
Method of Manufacture: Coiled and then paddled

Color: Tan

Temper:
Size: Very coarse
Material: Limestone, dolomite, chert, and red shale
Texture: Varies, generally quite porous and contorted

SURFACE TREATMENT:
Exterior: A very crude cordmarking which is more or less vertical to the lip

Interior: Crude horizontal cordmarking parallel to the lip

DECORATION: None

FORM:
Lip: Rounded

Rim: Straight

Neck: Straight

Body: ?

Base: ?

Shape: Open pot

Size of Sample: 122

COMMENT: This variety is almost certainly a manifestation of Vinette I of New York as described by Ritchie and MacNeish (1949:100). However, this variety has much cruder cordmarking than Vinette I and the use of predominately limestone and chert as tempering materials is quite varied from the crushed igneous rock of Vinette I. The use of chrushed chert as the aplastic and a crude form of cordmarking is also found at the Heck Shelter (Kinsey 1958:3). Since the Heck Shelter is the farthest south that "Vinette I" is found and similar modes noted above are found at Sheep Rock, this variety may be the product of a marginal culture area rather than a true type. But it should be noted that a type is characteristic of an area and a type is the sum total of all varieties found in an area. The difference appears to be great enough to denote a type-variety especially when one considers the varieties noted below.

Juniata Thick var. Interior Smooth (Fig. 6g-l)

PASTE:
Same as Juniata Thick var. Interior Cordmarked

SURFACE TREATMENT:
Exterior: Crude cordmarking which is more or less vertical to the lip

Interior: Crude horizontal cordmarking which has been smoothed, in most cases very poorly

DECORATION: None

SHAPE:
Same as Juniata Thick var. Interior Cordmarked

Size of Sample: 64

COMMENT: This variety of Juniata Thick is similar to certain varieties of Half Moon Cordmarked as described by Mayer-Oakes (1955:184-190). A similar phenomena of smoothing the interior of what is more or less Vinette I is found in Coastal New York and termed "Modified Interior Cordmakred" by Lopez (1957:25). He points out that there was a widespread attempt on the part of aboriginal potters from Connecticut to New Jersey to erase or smooth the interior cordmarking of Vinette I (Lopez 1957: 25). Both Lopez and Mayer-Oakes agree that this variety is transitional between cordmarked and completely smoothed interiors of later periods (Lopez 1957:25). In fact, this tendency can be seen in Sheep Rock Cordmarked which has similar interior smoothing although this has not been confirmed by stratigraphy.

Juniata Thick var. Plain (Fig. 7a-f)

PASTE:
Same as Juniata Thick var. Interior Cordmarked

SURFACE TREATMENT:
Both interior and exterior surfaces are smoothed cordmarking and in some cases it is quite well done.

DECORATION: None

FORM:
Same as Juniata Thick var. Interior Cordmarked

Size of Sample: 38

COMMENT: While this variety shares the type attributes (temper, color, and shape) with the other varieties of the type, there is one notable exception, it is plain both internally and externally. It appears, however, that the vessels were originally cordmarked and then smoothed. Except for the temper and shape, this variety of Juniata Thick compares to some degree with the steatite-tempered Marcy Creek Ware (Slattery 1946; Mason 1948; and Stephenson and Ferguson 1963). Stephenson and Ferguson describe the surface treatment as: "Exterior surfaces are smoothed by hand and often exhibit a wavy or lumpy appearance due to uneven smoothing of large temper particles" (1963:91). This description could easily fit Juniata Thick var. Plain. The lack of the typical shape of flat bottoms with lug handles and the lack of steatite tempering leds us to postulate a case of stimulus diffusion. Marcy Creek Plain influenced the development of Juniata Thick var. Plain which was constructed along the traditions of the local paste and form. This is not as disturbing as it seems when one remembers that the steatite vessels at Sheep Rock do not have lug handles.

An alternative possibility is that Juniata Thick var. Plain is a local manifestation of Point Peninsula Plain (Ritchie and MacNeish 1949:103). It should be noted, however, that Point Peninsula Plain is characteristically decorated with incised lines on the lip and is later than Vinette I (Ritchie and MacNeish 1949:103).

As if two possible sources for an Early Woodland plain tradition is not enough, there is also some degree of similarity between Juniata Thick var. Plain and McKees Rocks Plain, a type described by Mayer-Oakes (1955:190-191). He points out that this was a minor type of the Upper Ohio Valley of the Early Woodland period but is a little later than Half Moon Cordmarked and is limited to areas below Pittsburgh (1955:191).

<u>Sheep Rock Cordmarked</u> (Fig. 8a-c)

PASTE:

Method of Manufacture: Coiled and Paddled

Color: Tan

Temper:
- Size: Very coarse
- Material: Angular red shale
- Texture: Microcrystalline

SURFACE TREATMENT:

Exterior: Vertical cordmarking and then paddled or smoothed so that the cordmarking is flattened.

Interior: The interior may be either partially or completely smoothed.

DECORATION: None

FORM:

Lip: Square

Rim: Straight

Neck: Straight

Body: ?

Base: ?

Shape: Open pot

Size of Sample: 75

COMMENT: This type does not appear in any of the literature surveyed nor known by any of the authorities who saw it, hence it is considered to be a new type. It is very distinctive and can hardly be mistaken for any other type except Juniata Thick var. Interior Smooth. The presence of interior smoothing and vertical exterior cordmarking of both of these "types" tends to indicate an evolutionary sequence but the flattening or smoothing of the exterior cordmarking on Sheep Rock Cordmarked is quite distinctive from the crude cordmarking of Juniata Thick var. Interior Smooth. The temper is coarse when compared to the later ceramics of Sheep Rock but it is much more refined than that of Juniata Thick. This again indicates an evolutionary trend but the red shale tempering seems to be a unique local product. The name of this type was first published by Kinsey (1960) but there has been no type description published.

As noted in the section on Taxonomy, this type name actually stands for Sheep Rock Cordmarked var. unspecified and this could be considered to be the description of the "type" variety and includes the variety recovered at Sheep Rock and all those yet to be found.

Clemson's Island Platted (Fig. 9a-c; Fig. 10a-c)

PASTE:

Method of Manufacture: Coiled (?) and then malleated with a cordwrapped paddle and anvil.

Color: Grey to tan with grey predominating

Temper:

Size: Medium on the Wentworth Scale

Material: Angular grey chert and quartz of a dirty white due to iron impurities.

Texture: Microcrystalline

SURFACE TREATMENT:

Exterior: Cordmarked, and in some cases the neck is smoothed.

Interior: Smooth with no marks hence an anvil is implied.

DECORATION: The rim is marked or stamped with the edge of a cordwrapped paddle or cordwrapped stick. These marks are diagonal to the lip edge. The interior of the outflared rims is more or less cordmarked in a similar manner but have been smoothed in several examples. The neck in a number of cases has been stamped with a cordwrapped paddle edge to form diagonal bands which alternate with smoothed areas. The individual stamped impressions are parallel to the lip. In other examples the neck is completely smoothed.

FORM:

Lip: Rounded and pointed

Rim: Outflaring with some tendency toward overhanging

Neck: Slightly concave

Body: Elongated (?)

Base: ?

Shape: Jar-shaped vessel

Size of Sample: 29

COMMENT: This is a new type or rather variety unspecified which generally fits the characteristics of Clemson's Island ware. As well known to any student of Pennsylvania prehistory, the Clemson's Island types have yet to be described to any great degree in the literature. Clemson's Island Platted var. unspecified compares quite favorably to the more classic Clemson's Island Punctate varieties in temper, texture, surface finish, and other characteristics with the notable lack of the deep punctates. However, the lack of the "typical" deep punctates is not disturbing for Catherine McCann informed the author that only about 30% of the pottery from the type site has the "typical" punctates (1966). She also showed the author the general form of rim of the type site pottery and it is this rim which is found on Clemson's Island Platted. The stamped bands of this pottery are highly reminiscent of Owasco Platted as described by Ritchie and MacNeish (1949:111) and there appears to be stylistic similarities between the pottery types of these cultures that will be in discussions of the other Clemson's Island varieties. As noted above, there has been very little description of the Clemson's Island types and the majority of description has been that of a ware rather than types and varieties. As long as such descriptions are accepted as the final answer, little can be accomplished in the unraveling of Pennsylvania's prehistory.

Clemson's Island Incised (Fig. 10d-f)

PASTE:

Method of Manufacture: Coiled (?) and then malleated with a cordwrapped paddle and anvil.

Color: Grey to tan

Temper:

Size: Medium on the Wentworth Scale
Material: Chert with angular particles
Texture: Microcrystalline

SURFACE TREATMENT:

Exterior: Cordmarked with a cordwrapped paddle.

Interior: Smooth with no smoothing marks present hence anvil is implied.

DECORATION: The rim is marked or stamped with the edge of a cordwrapped paddle or cordwrapped stick. These impressions are perpendicular to the lip and are on both the interior and exterior of the rim. Below the overhanging rim are incised lines which are diagonal to the rim. One set extends well down into the body area and the other set is just below the overhanging rim. The incised lines are rather deep and well executed, probably done when the clay was leather hard. One set is superimposed on the other and punctates are at the ends of the lines.

FORM:

Lip: Rounded and pointed

Rim: Outflaring and overhanging

Neck: Concave

Body: ?

Base: ?

Shape: Jar-form vessel

Size of Sample: 3

COMMENT: This variety, as the other varieties of Clemson's Island, has not been well described. However, Clemson's Island Incised var. unspecified was described somewhat by Jones. While discussing the pottery found at the Clemson's Island site he states:

> "Incised designs were usually found along the outside surfaces of the rim fragments, and often upon the inside surfaces as well" (1931:95-96).

The "incised designs" may be the stamped patterns noted in the decoration of this design concept, the incised lines, could easily have been transformed to just below the rim in the more marginal Sheep Rock area. In other attributes it compares quite favorably to the other Clemson's Island varieties of pottery. Unfortunately there is a very small sample at Sheep Rock but it is felt that this variety will become better established as more pottery samples of the area are studied.

Clemson's Island Punctate var. Overhanging Rim (Fig. 11g-f)

PASTE:

Method of Manufacture: Coiled and then paddled and anviled.

Color: Grey to black, some tan

Temper:

Size: Coarse on the Wentworth Scale

Material: Quartz with rounded grains and dark grey, angular chert.

Texture: The quartz is megacrystalline and the chert is microcrystalline.

SURFACE TREATMENT:

Exterior: Vertical cordmarking with cordwrapped paddle.

Interior: Smooth, hence the use of an anvil is implied.

DECORATION: The most characteristic mode of this type is a row of very deep punctates made with a reed. The row of punctates forms a single line around the neck of the vessel which is parallel to the lip. The punctates are so deep that they produce knobs on the interior surface. The interior of the outflaring rim is stamped with the edge of a cordwrapped paddle or cordwrapped stick perpendicular to the lip. Some of the exterior rims are stamped in a similar manner. The neck of the vessel appears to have diagonal bands of stamped paddle edge cordmarking which is similar to Owasco Platted. The neck, however, is not smoothed and the typical cordmarking is exhibited. Figure a-c illustrates the more typical Clemson's Island rim form.

FORM:

Lip: Round and pointed

Rim: Outflaring and overhanging

Neck: Concave

Body: ?

Base: ?

Shape: Jar form

Size of Sample: 20

COMMENT: This is a new type description although Corl and Stackhouse refer to this type by the name "Clemson's Island Punctate" but do not give a type description (1962:Plate 5, No. 2). Clemson's Island Punctate var. Overhanging Rim is characterized by an overhanging rim and a row of deep punctates around the neck just below the rim. This characteristic of deep punctates is described by Jones (1931:96) and Lucy (1959:30-32) for some of the sherds at the type site and shows similarities to Wickham Corded Punctate of New York (Ritchie and MacNeish 1949:107-108). This variety found at Sheep Rock differs from the classical form in having a characteristically overhanging rim. This appears to be quite distinct to the Juniata Area and the only other sherd noted in the literature which is similar to Clemson's Island Punctate var. Overhanging Rim was found at the Montague Site and illustrated by Butler (1939:Plate 10, c).

Possible Clemson's Island Punctate Varieties (Fig. 12a-i)

COMMENT: There were several unusual forms of Clemson's Island Punctate found at Sheep Rock. In general they conformed to the type characteristics of temper, form, and deep punctates but instead of having a smooth or platted neck several examples were corded in much the same way as Owasco Corded Horizontal and others resemble Owasco Herringbone and Owasco Corded Oblique. All of these more or less abberant forms could indicate quite a wide range of varieties but the lack of sufficient representation leaves the question unanswered.

Owasco Corded Horizontal (Fig. 13a; Fig. 14a-b)

PASTE:

Method of Manufacture: Coiled (?) and then malleated with a cordwrapped paddle and anvil.

Color: Grey to tan

Temper:

Size: Coarse on the Wentworth Scale

Material: Chert of uniform angular particles

Texture: Microcrystalline

SURFACE TREATMENT:

Exterior: Cordmarked with a cordwrapped paddle.

Interior: Smooth, hence the impliaction of an anvil.

DECORATION: The neck is banded with single lines of edge-wrapped paddle stamping or a cordwrapped stick. The lines are approxmately 12 in number and are parallel to the rim. The interior and exterior of the rim are stamped with diagonals or edge-wrapped paddle or cordwrapped stick. These diagonal stamps are very well executed and almost appear to have been made by drag punctation.

FORM:

Lip: Square

Rim: Outflaring

Neck: Concave

Body: ?

Base: ?

Shape: Jar form

Size of Sample: 34

COMMENT: This type is nearly identical to the Owasco Corded Horizontal as described by Ritchie and MacNeish (1949:111-112). The recognition of this type of Sheep Rock appears to be the southern-most extension of its range.

<u>Owasco Corded Oblique</u> (Fig. 15a-c)

PASTE:

Method of Manufacture: Coiled (?) and then malleated by paddle and anvil.

Color: Grey

Temper:
Size: Coarse on the Wentworth Scale
Material: Quartz with rounded white grains
Texture: Megacrystalline

SURFACE TREATMENT:

Exterior: Cordmarked with a cordwrapped paddle.

Interior: Smoothed with some vertical cordmarking left near the mouth.

DECORATION: The interior and exterior of the rim are stamped with diagonals with the edge of a cordwrapped paddle or a cord-wrapped stick. The neck is stamped with alternate diagonal bands composed of three or four lines of cordwrapped paddle or cordwrapped stick impressions and smoothed areas.

FORM:

Lip: Rounded and wide

Rim: Outflaring and overhanging

Neck: Concave

Body: ?

Base: ?

Shape: Jar form

Size of Sample: 3

COMMENT: This type is undoubtedly an unspecified variety of Owasco Corded Oblique as described by Ritchie and MacNeish (1949:112). Due to the small sample it is not possible to distinguish the modes which would set it apart from the type description to gain some insight into the local development of style at Sheep Rock.

<u>Owasco Platted</u> (Fig. 16a-j)

PASTE:

Method of Manufacture: Coiled (?) and then malleated by paddle and anvil.

Color: Tan to grey

Temper:

Size: Coarse on the Wentworth Scale

Material: Quartz with rounded particles and angular chert particles with the quartz being dirty white and the chert a dark grey color.

Texture: The quartz is megacrystalline and the chert is microcrystalline.

SURFACE TREATMENT:

Exterior: Cordmarked

Interior: Cordmarked and then was smoothed because brush or smoothing marks are present.

DECORATION: Both sides of the rim are decorated with diagonal cordwrapped paddle edge or cordwrapped stick. This stamping is also present on the neck of the vessel where the decoration consists of alternate diagonal bands of smooth and stamped paddle-edge cordmarking. This forms a stepped effect and is parallel to the lip.

FORM:

Lip: Square

Rim: Outflaring

Neck: Concave

Body: ?

Base: ?

Shape: Jar form

Size of Sample: 49

COMMENT: This variety or "type" is similar, if not identical, to Owasco Platted which was described by Ritchie and MacNeish (1949:111). This appears to be the southern-most extension of its range yet reported.

Carpenter Brook Cord-on-Cord (Fig. 17a-b)

PASTE:
Method of Manufacture: Coiled (?) and malleated with cord-wrapped and anvil.

Color: Grey to tan

Temper:
Size: Coarse on the Wentworth Scale
Material: Chert with angular particles, dark grey variety.
Texture: Microcrystalline

SURFACE TREATMENT:
Exterior: Cordmarked with a cordwrapped paddle.

Interior: Smooth with no marks visible hence the use of an anvil.

DECORATION: Large stamped cordmarking by the use of an edge or a paddle or a cordwrapped stick. This is generally restricted to the neck area. It is quite crude and large.

FORM:
Lip: Square

Rim: Outflaring and thickened

Neck: Concave

Body: Elongated

Base: Concoidal (?)

Shape: Jar form

Size of Sample: 32

COMMENT: This type was tentatively identified by Stackhouse and Corl as Levanna Cord-on-Cord (1962:12) however comparison to the type description by Ritchie and MacNeish (1949:110) the type proved to be Carpenter Brook Cord-on-Cord (Ritchie and MacNeish 1949:108). The critical point is the description of the lip form and decoration. The lip of Carpenter Brook Cord-on-Cord is flat (square in our terminology) without lip-rim decoration whereas the lip of Levanna Cord-on-Cord is flattened rather than completely flat and stamped in the lip-rim area. In addition, Lucy points out that: "Carpenter Brook Cord-on-Cord dominates this series with a smattering of Levanna Cord-on-Cord and Levanna Corded Collar remaining the minority types" (1959:32). The numbers found at Sheep Rock certainly confirm this. The lack of decoration on the rim also tends to type this group of sherds as Carpenter Brook Cord-on-Cord rather than Levanna Cord-on-Cord.

Levanna Cord-on-Cord (Fig. 18a-c)

PASTE:

Method of Manufacture: Coiled (?) and then malleated with cordwrapped paddle and anvil.

Color: Grey predominates

Temper:

Size: Coarse on the Wentworth Scale
Material: Chert with angular particles
Texture: Microcrystalline

SURFACE TREATMENT:

Exterior: Vertical cordmarking made with a cordwrapped paddle.

Interior: Smooth, hence the use of an anvil is implied.

DECORATION: The interior and exterior are diagonally stamped with the edge of a cordwrapped paddle or cordwrapped stick. The neck is decorated by stamping of the edge-paddle type which is parallel to the lip and overlaps. It is quite crude and large.

FORM:

Lip: Square or straight

Rim: Overhanging and outflaring

Neck: Concave

Body: ?

Base: ?

Shape: Jar form

Size of Sample: 6

COMMENT: The more modified lip form and the presence of decoration seem to place this type with the Levanna Cord-on-Cord described by Ritchie and MacNeish (1949:110). The majority of the differences between this type and Carpenter Brook Cord-on-Cord have been discussed under the latter.

Castle Creek Incised Neck (Fig. 19a-c)

PASTE:
Method of Manufacture: Coiled (?) and then cordmarked with paddle and anvil.

Color: Grey

Temper:
Size: Coarse on the Wentworth Scale
Material: Quartz with angular particles, white in color
Texture: Megacrystalline

SURFACE TREATMENT:
Exterior: The exterior is cordmarked by a cordwrapped paddle.

Interior: Smooth, hence the use of an anvil is implied.

DECORATION: The neck, rim, and collar appear to have been slightly smoothed. The major decoration motif is a herring bone pattern or open triangles of incised lines around the neck below the slightly collared rim. The outflaring rim is decorated on the interior with a single row of circular punctates. This row of punctates is not actually on the rim but rather at the apex of the convex neck.

FORM:
Lip: Square

Rim: Outflaring

Neck: Concave

Body: ?

Base: ?

Shape: Jar form

Size of Sample: 4 (all from one vessel)

COMMENT: We hesitate to call this one vessel a type but rather would prefer to consider it more like a "trade sherd." It is certainly deviant enough from the typical traditions at Sheep Rock to be considered as such. However, it does appear to be what Ritchie and MacNeish refer to as Castle Creek Incised Neck (1949:114-115) and so is typed as such but should not be considered to be part of the ceramic assemblage at Sheep Rock.

Shenk's Ferry Incised var. Multiple Banded (Fig. 22d-g)

PASTE:

Method of Manufacture: Coiled (?) and then malleated with cordwrapped paddle and anvil.

Color: Tan to grey with some black

Temper:

Size: Coarse on the Wentworth Scale

Material: Chert of a dirty white color and some dark grey in color. The dirty white color is due to iron impurities. The chert is angular which seems to indicate that it was broken for tempering material.

Texture: Microcrystalline

SURFACE TREATMENT:

Exterior: Cordmarking which was not smoothed but in some cases the upper portion of the vessel appears to have been smoothed and polished.

Interior: The interior was smoothed with no marks visible, hence the use of an anvil is implied.

DECORATION: Usually three incised lines parallel to the lip on the rim which is a very small collar. The neck is decorated with incised lines in a herringbone pattern; however, in some cases the lines are parallel to the lip and bordered by small, almost elongated punctates along the rim. In all cases the lines were incised while the clay was still damp. The lip in most examples was smoothed but in some cases the cordmarking remains. In some cases, as noted above, there appears to be polishing.

FORM:

Lip: Square and straight

Rim: Straight, probably a collar but in some cases incurved.

Neck: Concave

Base: ?

Body: ?

Shape: A low collared jar or open mouth pot with enlarged rim.

Size of Sample: 52

COMMENT: This variety is very similar to Shenk's Ferry Incised (Multiple Banded Subtype) as described by Heisey and Witmer (1964:26-29). It should also be pointed out that this variety, especially in the examples with punctation along the rim, appear to be a forerunner of the Schultz Incised varieties. The major difference between the variety of Shenk's Ferry found at Sheep Rock and those of the classic sites is temper. Chert temper is not present in the varieties found in the type sites but rather gneiss and quartz are found there (Witthoft 1954:23). The temper at Sheep Rock shows some affinities with Steward Site (Witthoft 1954: 23) for it is at this site that about 3% chert temper is found and no gneiss temper. Quartz is the dominate form of temper for the Steward Site. Perhaps the variety which is found at Sheep Rock should be given a variety name because of the high occurrence of chert temper but it is felt that as long as this point is recognized there will be no difficulties in description until further patterns can be established.

Shenk's Ferry Incised var. Simple (Fig. 20a-f)

PASTE:
Same as Shenk's Ferry Incised var. Multiple Banded.

SURFACE TREATMENT:
Same as Shenk's Ferry Incised var. Multiple Banded.

DECORATION: Incised lines of usually vertical or diagonal orientation compose the decoration style of this variety. There does not appear to be any grouping of the lines. The interior of the rim is decorated with diagonal incised lines. One example has a cordwrapped paddle edge stamping on the exterior rim which is highly reminiscent of some of the Owascoid types. Except for the incised lines decorating the interior, it is smooth as is the area of decoration on the exterior.

FORM:
Same as Shenk's Ferry Incised var. Multiple Banded.

Size of Sample: 14

COMMENTS: Except for the differences in temper that were noted under the "Comment" on Shenk's Ferry Incised var. Multiple Banded, this variety is highly comparable to Shenk's Ferry Incised (Simple Incised subtype) described by Heisey and Witmer (1964:26). In fact we have adapted their "subtype" terminology into our type-variety concept. This was done for all of the Shenk's Ferry Incised varieties. The only major distinction between the Shenk's Ferry Incised var. Simple recovered at Sheep Rock and that described by Heisey and Witmer is the incised line decoration on the interior of the rim. Whether this was omitted from the description of Heisey and Witmer or is unique to Sheep Rock is not known for the type examples were not available for examination in time for the publication of this report.

<u>Shenk's Ferry Incised var. Complex</u> (Fig. 21a-f)

PASTE:
Same as Shenk's Ferry Incised var. Multiple Banded.

SURFACE TREATMENT:
Same as Shenk's Ferry Incised var. Multiple Banded.

DECORATION: The decoration consists of what could be considered to be complex incised line groups that form geometric platts which are usually triangular.

FORM:
Same as Shenk's Ferry Incised var. Multiple Banded.

Size of Sample: 26

COMMENT: This, like the other varieties of Shenk's Ferry Incised, is nearly identical to those described by Heisey and Witmer (1964), the only exception being the temper. Heisey and Witmer have described this variety as Shenk's Ferry Incised (Complex Incised subtype) (1964:26) and we, as noted before, have simply converted their terminology to the type-variety nomenclature. It appears that the Shenk's Ferry Incised varieties were completely represented at Sheep Rock but were made from clay of local variety. It is interesting to note that only two castellated rims were found in the total Shenk's Ferry Incised sample at Sheep Rock. This is the same number found at the Blue Rock Site by Heisey and Witmer (1964:26).

<u>Schultz Incised</u> (no illustration)

PASTE:
Method of Manufacture: Coiled (?) and then malleated with cordwrapped paddle and anvil.

Color: Tan and grey predominate with some black

Temper: Mussel shell approximately 35% of the paste.

SURFACE TREATMENT:
Exterior: Cordmarked

Interior: Smooth with no smoothing marks hence the anvil is implied.

DECORATION: The decoration consists of incised lines made when the clay was still damp for "plough" ridges can be seen on the edges of the incised lines. The exterior, in the majority of cases, was not smoothed and the cordmarking is still present. Decoration is restricted to a collar-rim. The incised lines compose a band which is demarcated by a single row of elongated punctates at the top and bottom of the band. The row of punctates does not appear in all examples. The band, itself, is a group of incised lines which alternate between diagonals and lines parallel to the rim of the vessel. These form triangular figures or platts.

FORM:
Lip: Flat

Rim: Straight (Collar)

Neck: Concave

Body: ?

Base: ?

Shape: Collared jar form

Size of Sample: 170

COMMENT: This "type" of the Historic Susquehannock Period has been described by Kinsey (1959:68-77) and the examples found at Sheep Rock tend to conform to the type definition with several exceptions. As noted before, we are not referring to a type of pottery but rather a variety which is not specified. Since these sherds are, for the most part, portions of the collar and do not exhibit lip forms, very little can be done to compare them to the "classic" type. It could be noted here, however, that none of the varieties found at Sheep Rock, including those below had effigies and there does not appear to be any castellation of the rim and lip. None of the low-collar varieties were found at Sheep Rock.

<u>Schultz Incised var. Side-Punctate Lip</u> (Fig. 23a-d)

PASTE:
Same as Schultz Incised var. unspecified.

SURFACE TREATMENT:
Same as Schultz Incised var. unspecified.

DECORATION: The same as Schultz Incised var. unspecified with the exception that the side of the lip is punctated with a row of elongated punctates. It appears that the stylistic concept of Schultz Incised var. notched lip had "slipped" to the upper portion of the rim or side of the lip depending upon the reader's choice of terms for this portion of the vessel.

FORM:
The same as Schultz Incised var. unspecified with the exception of the lip or rim treatment noted above.

Size of Sample: 75

COMMENT: Schultz Incised var. side-punctate lip appears to be more typical of the classic Schultz Incised of the Susquehanna Basin with the exception that there is little or no stylistic variation. In addition, the lack of castellation, effigies, low-collar forms, etc. are major areas of difference. Examples of Schultz Incised var. side-punctate lip are illustrated by Kinsey in Figure 9, nos. 8-10 (1959: 81). The lack of stylistic variation in this variety is attributed to the conservative nature of Sheep Rock ceramics but there is some implication that the side-punctate lip variety is later than the notched-lip variety.

Schultz Incised var. Notched Lip (Fig. 23e; Fig. 24a-b)

PASTE:
Same as Schultz Incised var. unspecified.

SURFACE TREATMENT:
Same as Schultz Incised var. unspecified.

DECORATION: The same as Schultz Incised var. unspecified with the exception that the lip is notched or punctated. The lip, as noted before is that portion of the vessel which surrounds the orifice and is, in this case, more or less parallel to the ground when the pot is upright. It is this surface which is notched or punctated.

FORM:
The same as Schultz Incised var. unspecified with the exception of the lip treatment noted above.

Size of Sample: 43

COMMENT: This variety is comparable to a variant Kinsey refers to as having a distinct characteristic of a notched lip (1959:Fig. 6f). He points out that:

> "It is a conservative form harking back to widespread and generalized Iroquois motifs, especially to the Mohawk Chance Incised, the Deowongo Incised, and the Durfee Underlined types" (Kinsey 1959:69).

This same variety is found at the Albert Ibaugh site (Kinsey 1960:94). With the lack of the characteristic castellated rim and effigies, these conservative forms can be expected at Sheep Rock for this site seems to be located in a marginal area and a marginal area is typically conservative.

Schultz Incised var. Punctate (Fig. 22a-c)

PASTE:
Same as Schultz Incised var. unspecified.

SURFACE TREATMENT:
Same as Schultz Incised var. unspecified.

DECORATION: Alternate areas which consist of bands or triangular platts of punctates and smoothed or incised lines. Both the punctates and the incised lines may be of horizontal or vertical orientation.

FORM:
Same as Schultz Incised var. unspecified.

Size of Sample: 7

COMMENT: This variety does not appear to have been too popular but is most certainly associated with the pottery from the "classic" Susquehannock sites. Witthoft illustrates this variety in Figure 3, nos. a and b (1959:45) and Kinsey also illustrates some examples (1959:Figure 7d, and Figure 9, nos. 9, 10, and 17). The major difference between this variety from Sheep Rock and those of the Susquehannock Basin is the lack of castellated rims and effigies.

Miniature Pots (Fig. 25a-g)

Ten sherds from what appear to be several small pots, usually under 6 cm in height, were found at Sheep Rock. They were either shell tempered or the tempering was not obvious except in one case where it was determined to be grit (Fig. 25a,b). All of the miniature pots found at Sheep Rock appear to be modeled and of a jar form. The grit-tempered sherd is a bowl shape and is cordmarked on the exterior whereas the interior is smooth. The majority of the sherds are smooth on both the inside and outside with no other form of decoration. One sherd might have been painted (see Fig. 25c). The classification of miniature pot should possibly include some of the sherds that were typed with Montague Incised-Punctate. However, the majority of the miniature pot sherds are probably most similar to those described by Kinsey (1959:90) for the Susquehanna Basin. Kinsey refers to this type of sherd as a "toy pot" (1959:90) but we feel that the term "miniature" is preferable to "toy" for it does not imply a function but rather is purely descriptive.

Conclusions

The ceramic tradition that is considered to be Early Woodland is that of the Juniata Thick varieties. This is undoubtedly part of the same Early Woodland ceramic tradition that was widespread throughout the Northeast and Great Lakes areas. From the degree of similarity between all of these types we are entirely confident of postulating an Early Woodland Ceramic System which would include all of these types such as Vinette I, Juniata Thick, Half Moon Cord, Fayette Thick, etc. Since this is such a widespread tradition and almost a horizon it appears that there was a great deal of stylistic and technological exchange between centers of ceramic development.

As in the rest of the Northeast, there appears to be a period of local development at Sheep Rock. This is manifested as Sheep Rock Cordmarked. As pointed out earlier, the temper remains generally the same material although decreasing in size which would tend to indicate an increase in technological skill. The design itself, appears to be a direct outgrowth of Juniata Thick var. Interior Smooth, the variety which seems to be part of the marginal modification of Vinette I. During both the Early and Middle Woodland there seems to be quite a lack of contact to the East with the possible exception of Juniata Thick var. Plain and its possible similarity to Marcy Creek Plain.

The Late Middle Woodland Period is somewhat confused, but it is quite obvious that at Sheep Rock there were a number of stylistic and technological introductions. The Owascoid varieties appear to be directly connected with those of New York but it is most notable that the complete Owascoid complex is lacking at Sheep Rock. Whether this is the product of a marginal culture area or an incomplete sample is not yet known. The Clemson's Island varieties also show this tendency, particularly in the rather unique overhanging rim noted on Clemson's Island Punctate var. Overhanging Rim. However, since the complete ceramic complex of the "Clemson's Island Culture" has yet to be fully described elsewhere, we cannot be sure of the degree of divergence at Sheep Rock. We agree, however, with the general concensus us that Clemson's Island is slightly earlier than Owasco and more local (Pennsylvania) in origin. This continuity continues into Shenk's Ferry types because of the similarity in temper.

The Shenk's Ferry types again denote the marginal ceramic development at Sheep Rock. Only the varieties of Shenk's Ferry Incised were recovered at Sheep Rock without any of the equally common Shenk's Ferry Cordmarked varieties. It should be noted, however, that the poorly welded, folded rim so distinctive of the Shenk's Ferry Cordmarked varieties is also quite common on the Owascoid varieties recovered at Sheep Rock. Otherwise, the Shenk's Ferry sherds of Sheep Rock are nearly identical to those of the "classic" Shenk's Ferry sites along the Susquehanna River. The same replacement of Shenk's Ferry types by Susquehannock types that is found along the Susquehanna River is found at Sheep Rock although the replacement is with what is believed to be more conservative varieties of Schultz Incised. This again would support our position that Sheep Rock was a marginal ceramic center during most of its history.

Figure 6. Juniata Thick var. Interior Cordmarked and Juniata Thick var. Interior Smooth

a. Exterior, Juniata Thick var. Interior Cordmarked

b. Rim Profile, Juniata Thick var. Interior Cordmarked

c. Interior, Juniata Thick var. Interior Cordmarked

d. Exterior, Juniata Thick var. Interior Cordmarked

e. Rim Profile, Juniata Thick var. Interior Cordmarked

f. Interior, Juniata Thick var. Interior Cordmarked

g. Exterior, Juniata Thick var. Interior Smooth

h. Rim Profile, Juniata Thick var. Interior Smooth

i. Interior, Juniata Thick var. Interior Smooth

j. Exterior, Juniata Thick var. Interior Smooth

k. Rim Profile, Juniata Thick var. Interior Smooth

l. Interior, Juniata Thick var. Interior Smooth

# Figure 6

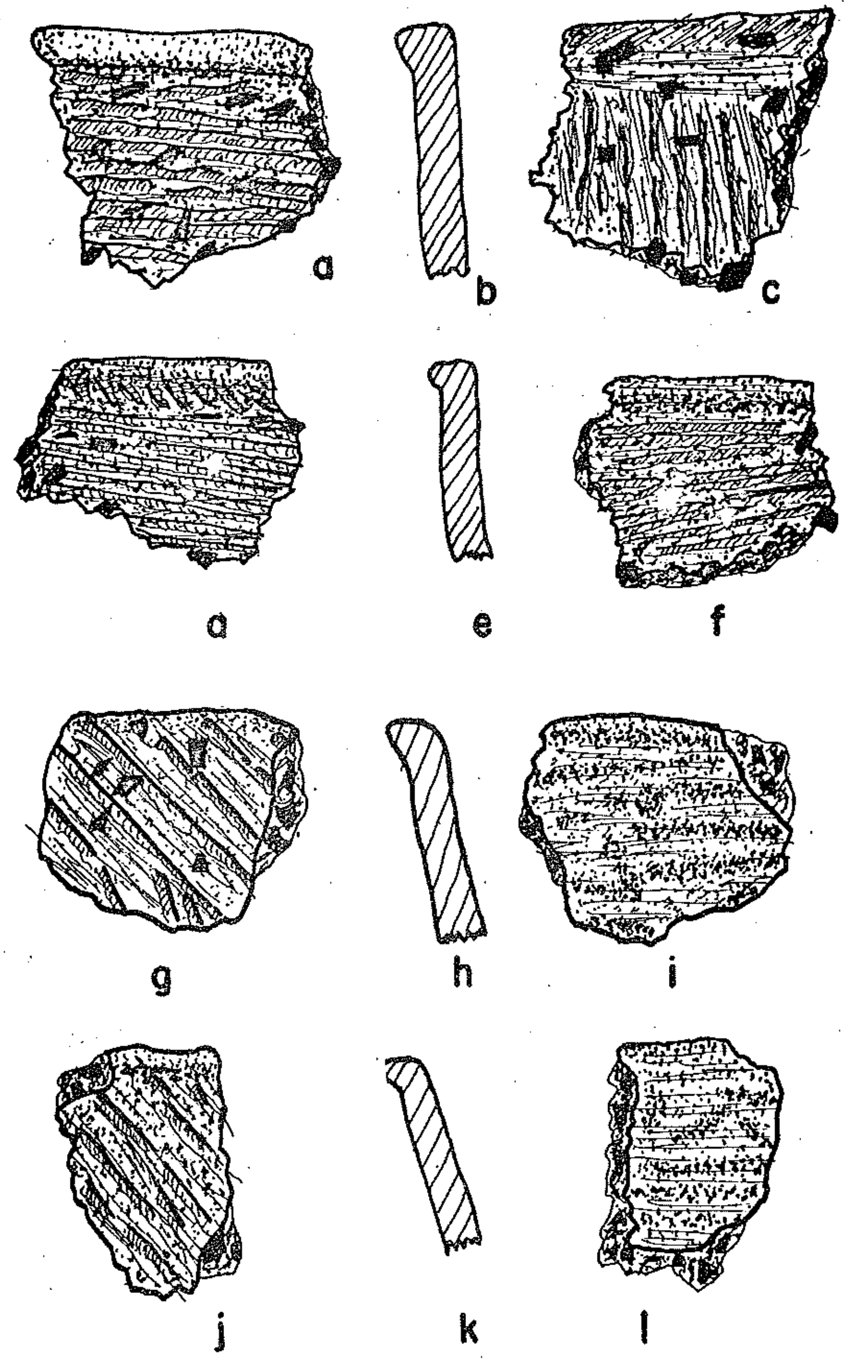


Figure 7. Juniata Thick var. Plain

a. Exterior, Juniata Thick var. Plain

b. Rim Profile, Juniata Thick var. Plain

c. Interior, Juniata Thick var. Plain

d. Exterior, Juniata Thick var. Plain

e. Rim Profile, Juniata Thick var. Plain

f. Interior, Juniata Thick var. Plain

Figure 7

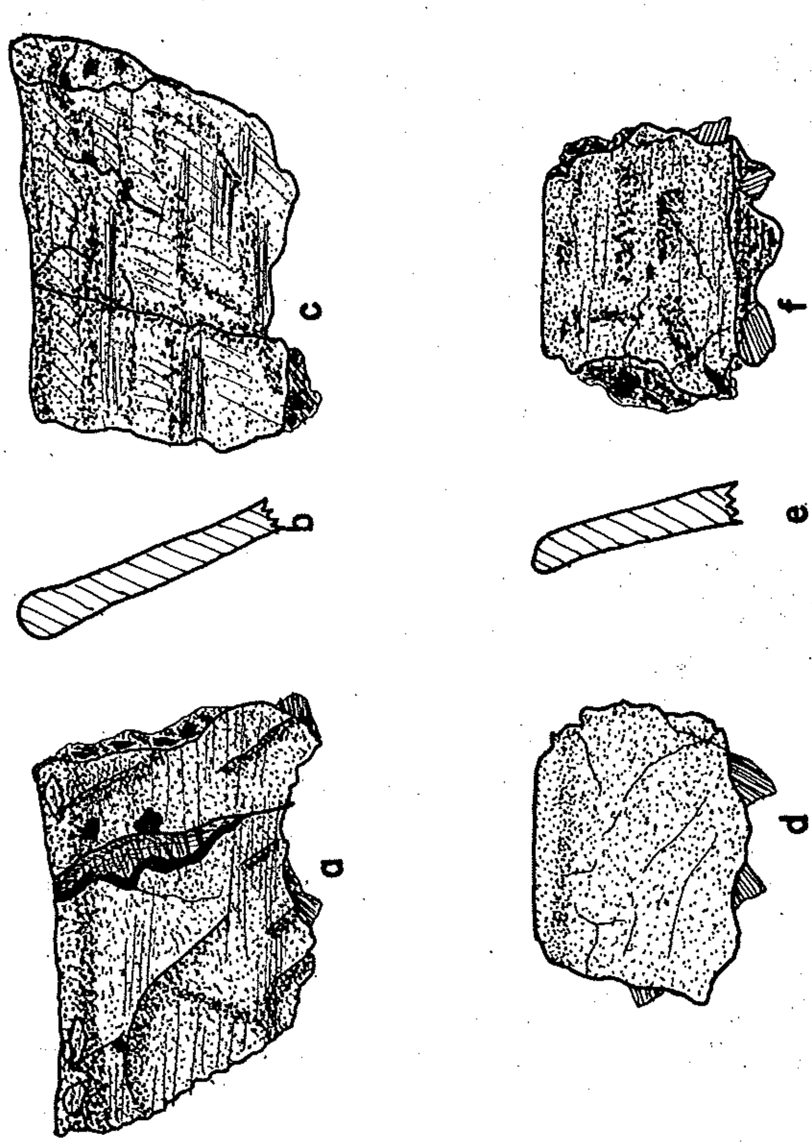


Figure 8. Sheep Rock Cordmarked

a. Exterior, Sheep Rock Cordmarked

b. Interior, Sheep Rock Cordmarked

c. Side View of Sheep Rock Cordmarked

Figure 8

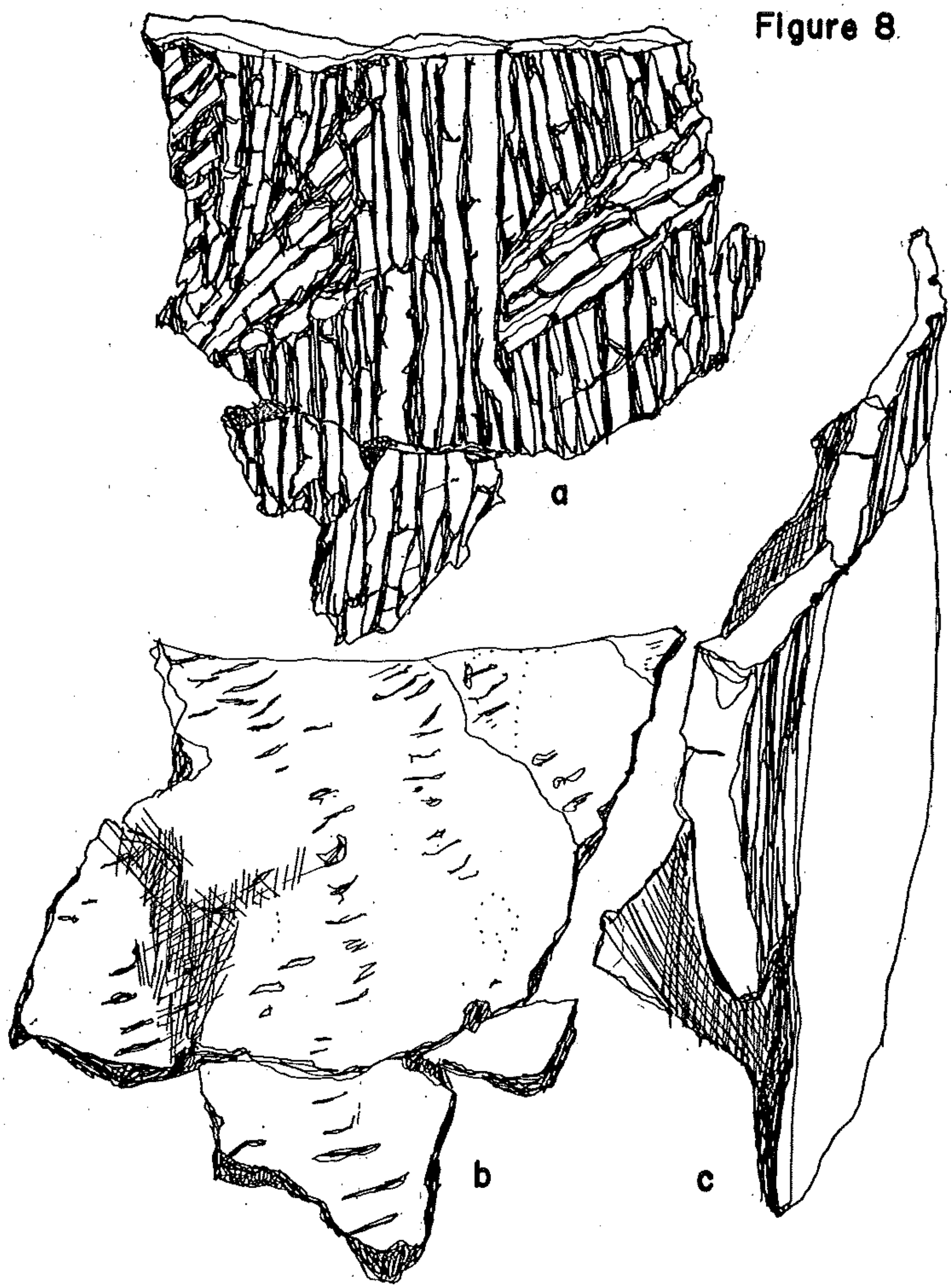


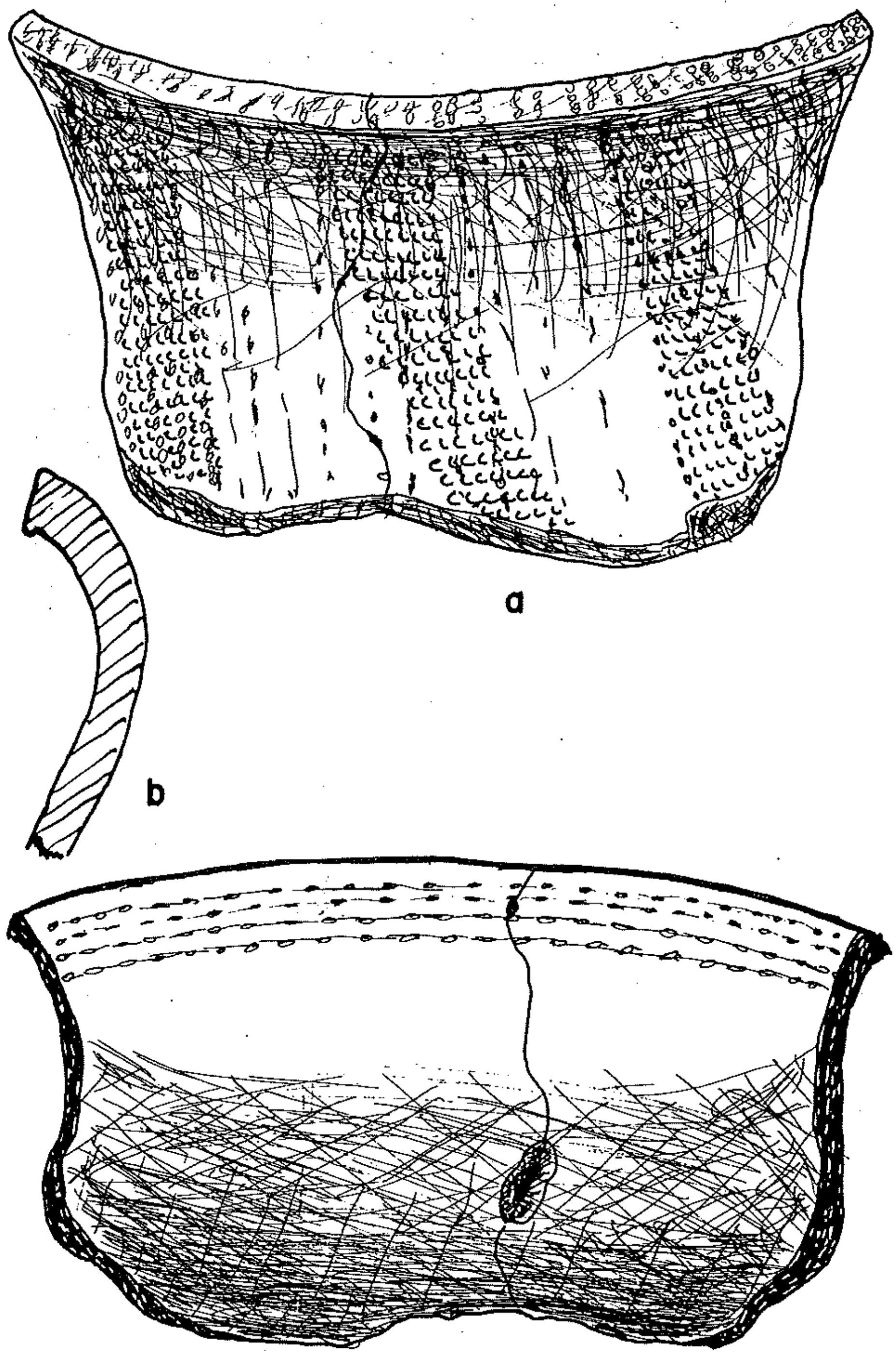
Figure 9. Clemson's Island Platted

a. Exterior, Clemson's Island Platted

b. Rim Profile, Clemson's Island Platted

c. Interior, Clemson's Island Platted

Figure 9



a

b

c

Figure 10. Clemson's Island Platted and Clemson's Island Incised

a. Exterior, Clemson's Island Platted

b. Rim Profile, Clemson's Island Platted

c. Interior, Clemson's Island Platted

d. Rim Profile, Clemson's Island Incised

e. Exterior, Clemson's Island Incised

f. Interior, Clemson's Island Incised

Figure 10

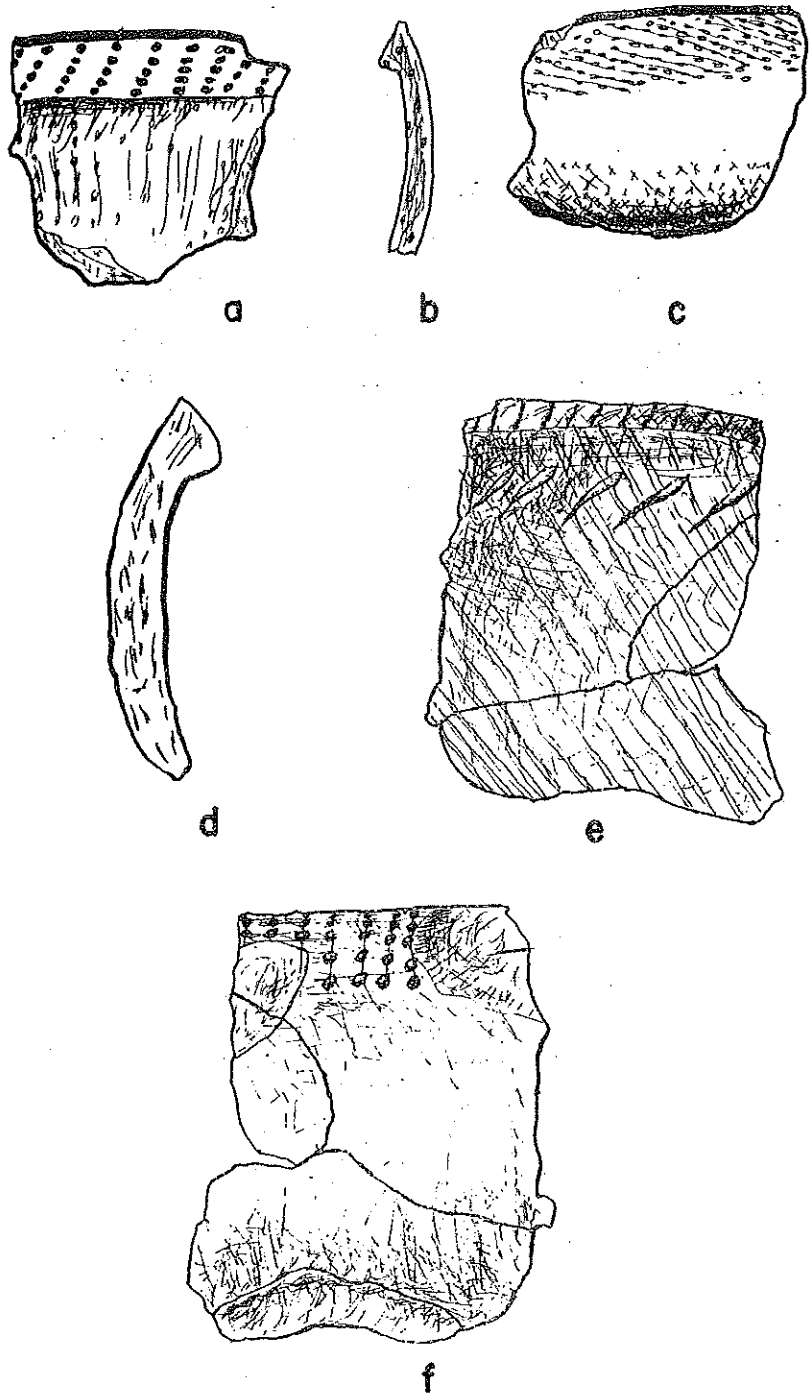


Figure 11. Clemson's Island Punctate var. Overhanging Rim

a. Exterior, Clemson's Island Punctate var. Overhanging Rim

b. Side View, Clemson's Island Punctate var. Overhanging Rim

c. Interior, Clemson's Island Punctate var. Overhanging Rim

d. Exterior, Clemson's Island Punctate var. Overhanging Rim

e. Rim Profile, Clemson's Island Punctate var. Overhanging Rim

f. Interior, Clemson's Island Punctate var. Overhanging Rim

Figure 11

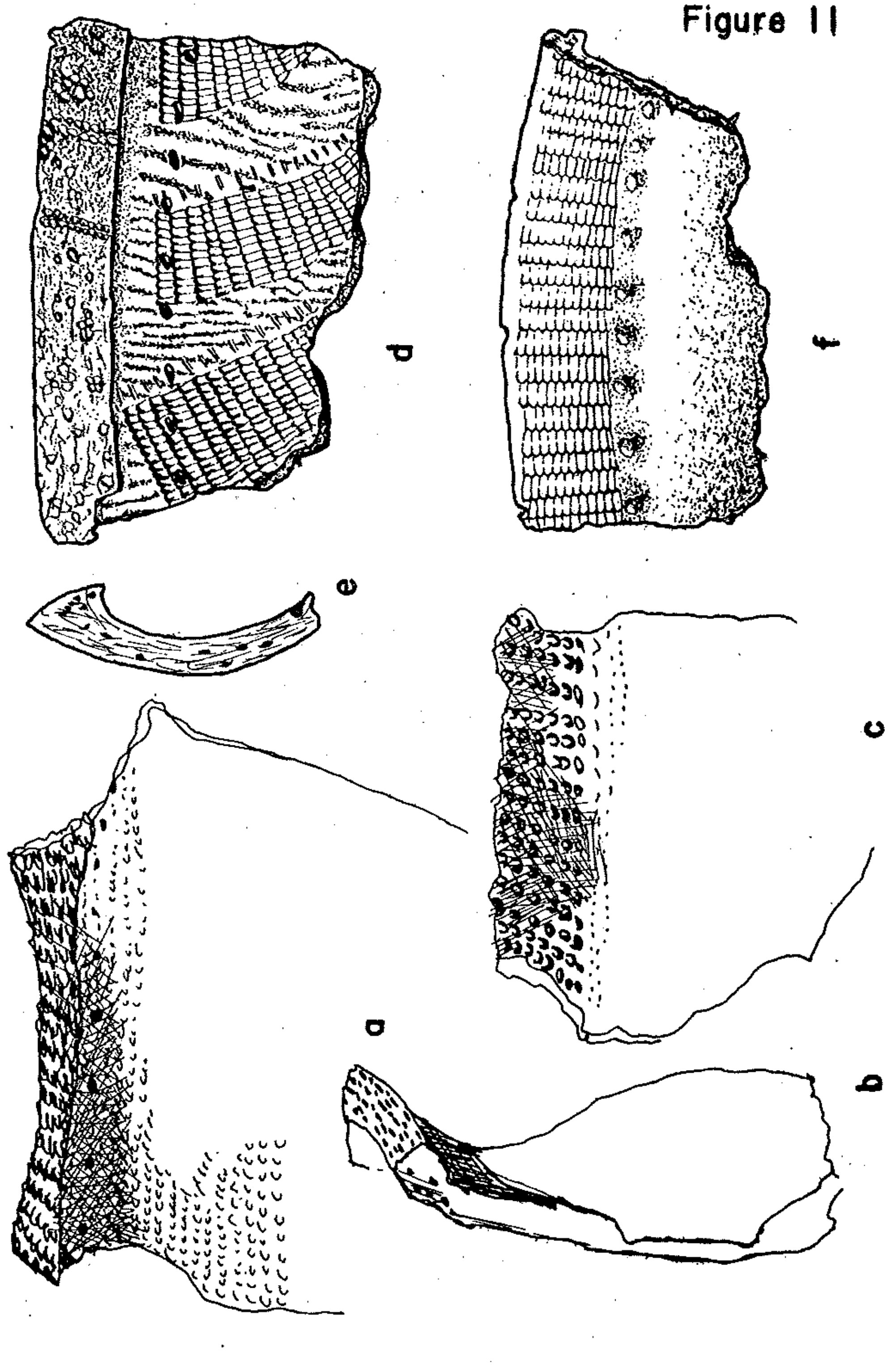


Figure 12. Possible Varieties of Clemson's Island Punctate

a. Exterior, Clemson's Island Punctate variety similar to Owasco Corded Horizontal

b. Rim Profile, Clemson's Island Punctate variety similar to Owasco Corded Horizontal

c. Interior, Clemson's Island Punctate variety similar to Owasco Corded Horizontal

d. Exterior, Clemson's Island Punctate variety similar to Owasco Herringbone

e. Rim Profile, Clemson's Island Punctate variety similar to Owasco Herringbone

f. Interior, Clemson's Island Punctate variety similar to Owasco Herringbone

g. Exterior, Clemson's Island Punctate variety similar to Owasco Corded Oblique

h. Rim Profile, Clemson's Island Punctate variety similar to Owasco Corded Oblique

i. Interior, Clemson's Island Punctate variety similar to Owasco Corded Oblique

Figure 12

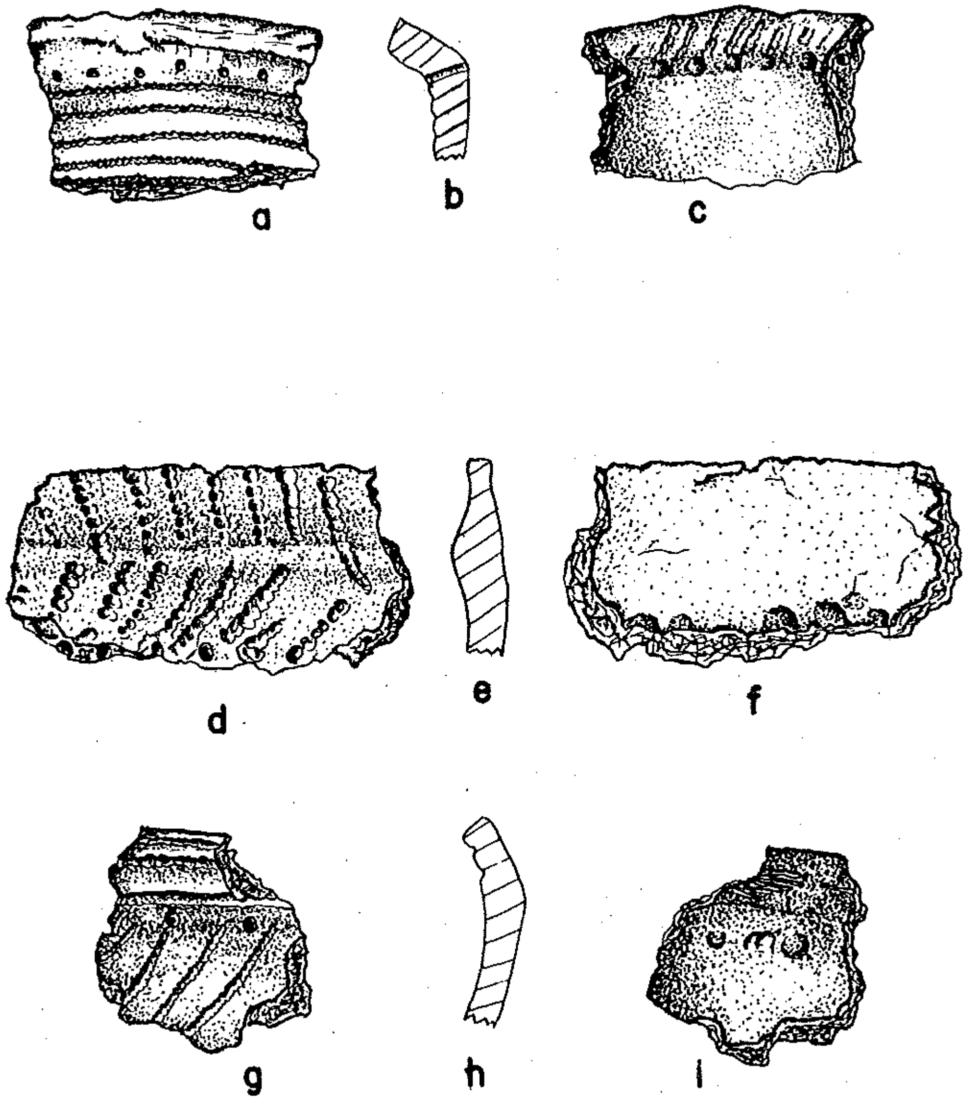
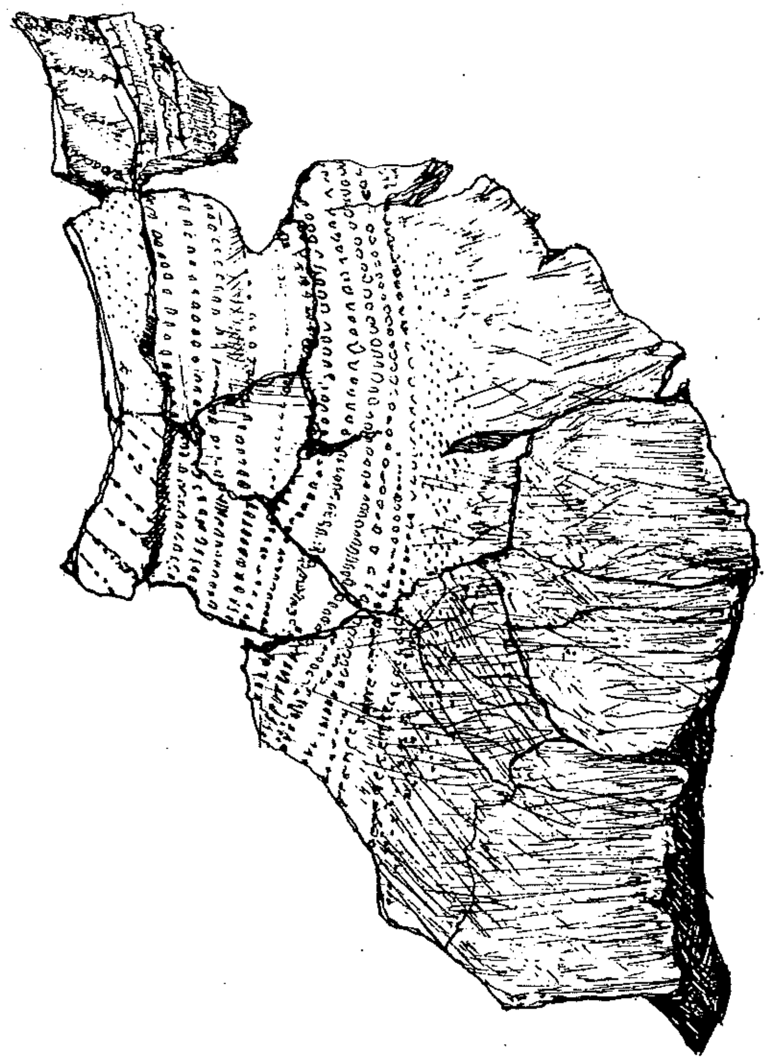


Figure 13. Owasco Corded Horizontal

a. Exterior, Owasco Corded Horizontal

Figure 13



a

Figure 14. Owasco Corded Horizontal

a. Interior, Owasco Corded Horizontal

b. Side View, Owasco Corded Horizontal

Figure 14

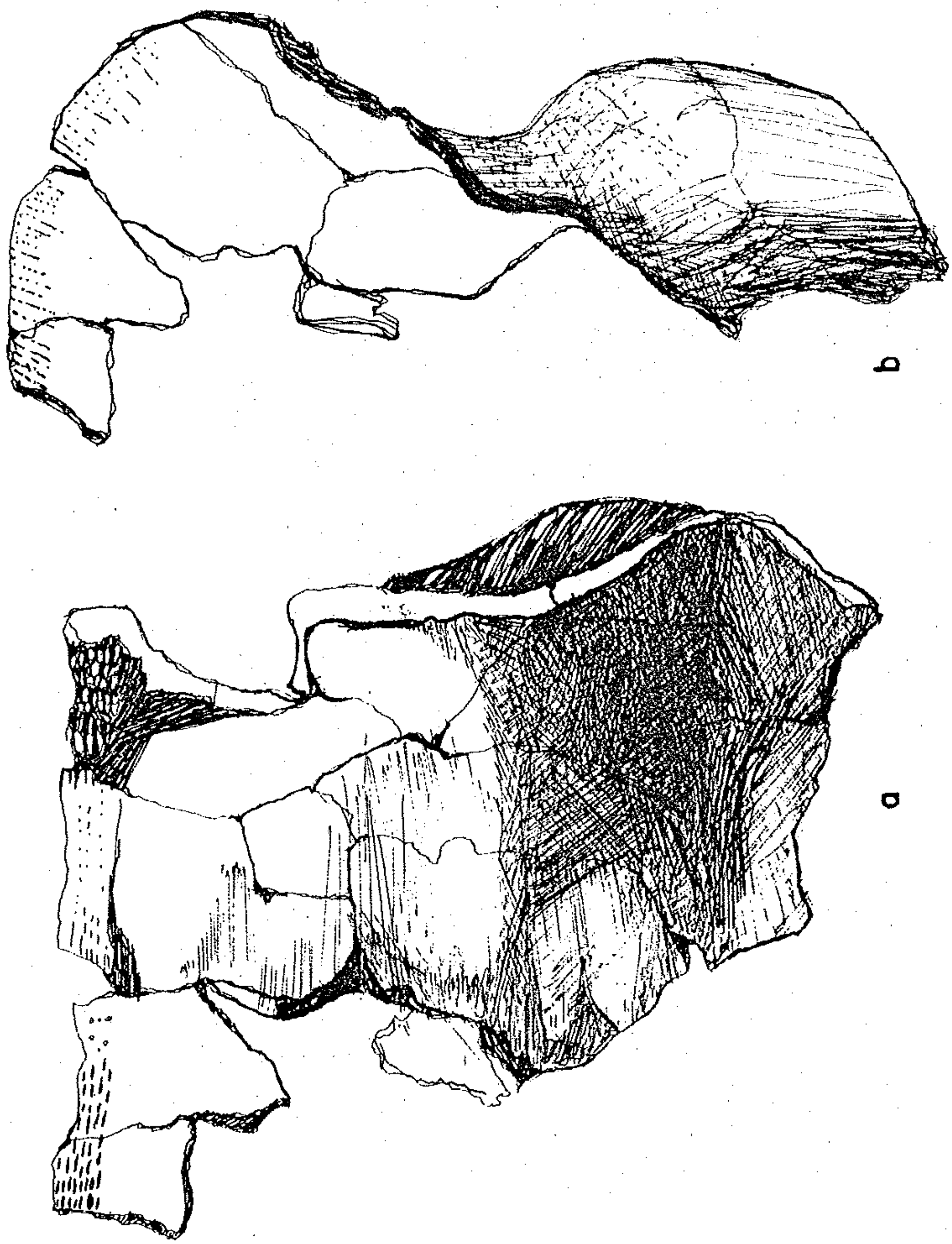


Figure 15. Owasco Corded Oblique

a. Exterior, Owasco Corded Oblique

b. Side View, Owasco Corded Oblique

c. Interior, Owasco Corded Oblique

Figure 15

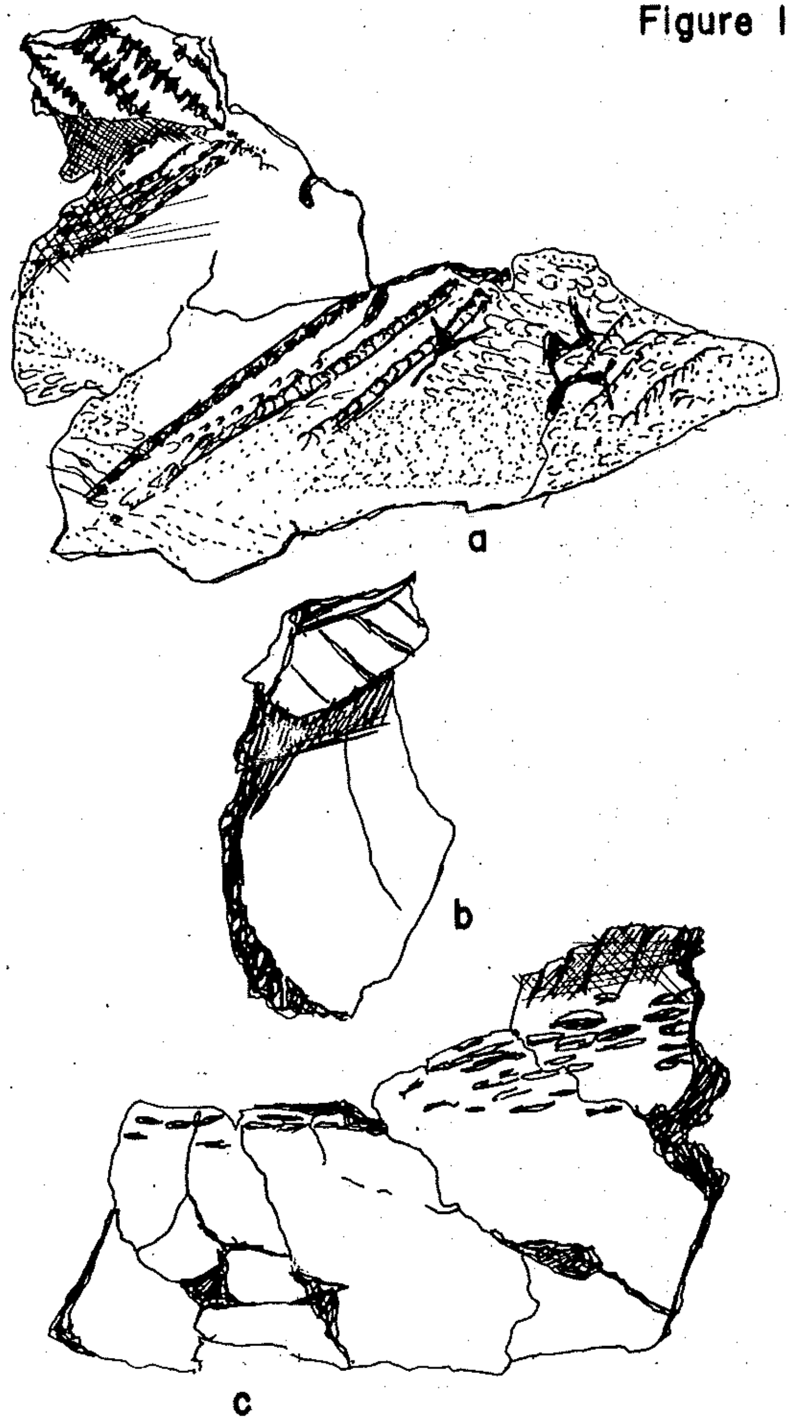


Figure 16. Owasco Platted

a. Exterior, Owasco Platted

b. Side View, Owasco Platted

c. Interior, Owasco Platted

d. Exterior, Owasco Platted

e. Side View, Owasco Platted

f. Interior, Owasco Platted

g. Exterior, Owasco Platted

h. Side View, Owasco Platted

i. Interior, Owasco Platted

Figure 16

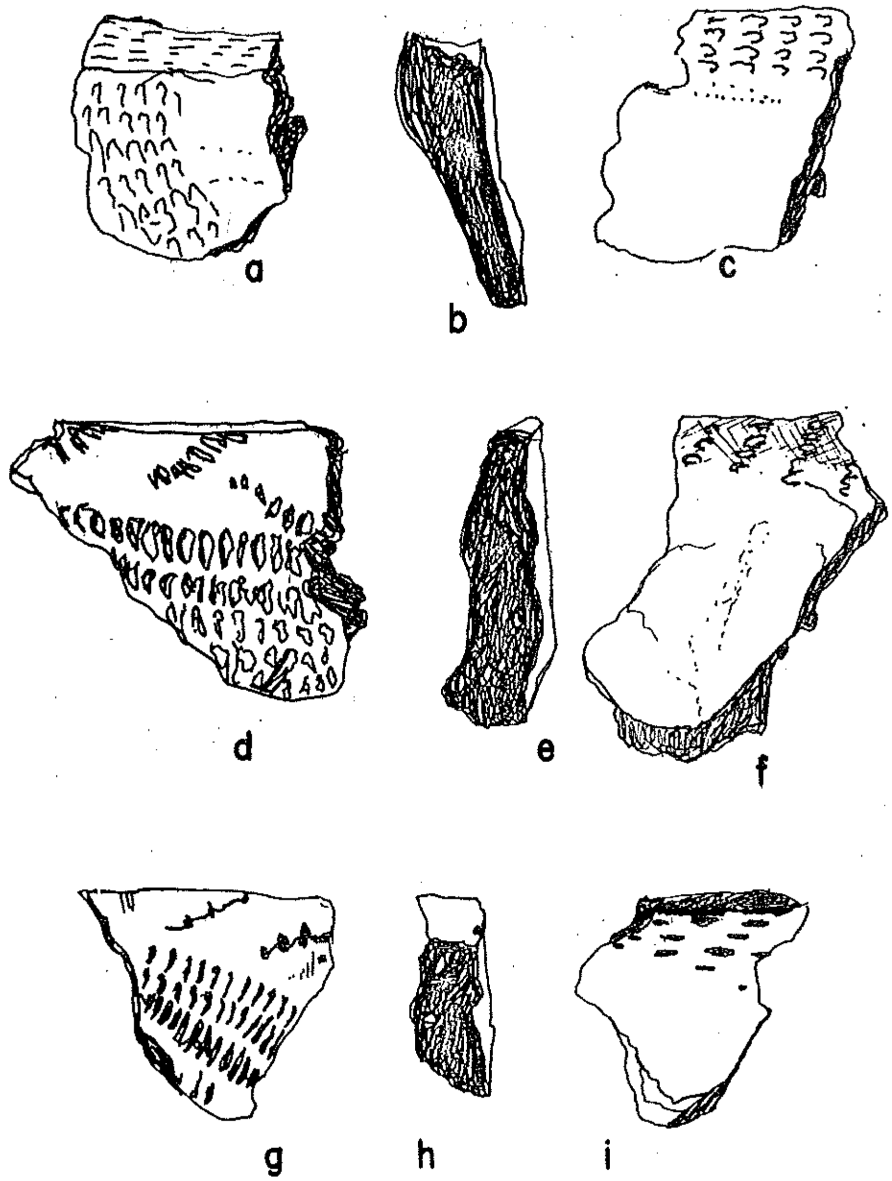


Figure 17. Carpenter Brook Cord-on-Cord

a. Exterior, Carpenter Brook Cord-on-Cord

b. Side View, Carpenter Brook Cord-on-Cord

Figure 17

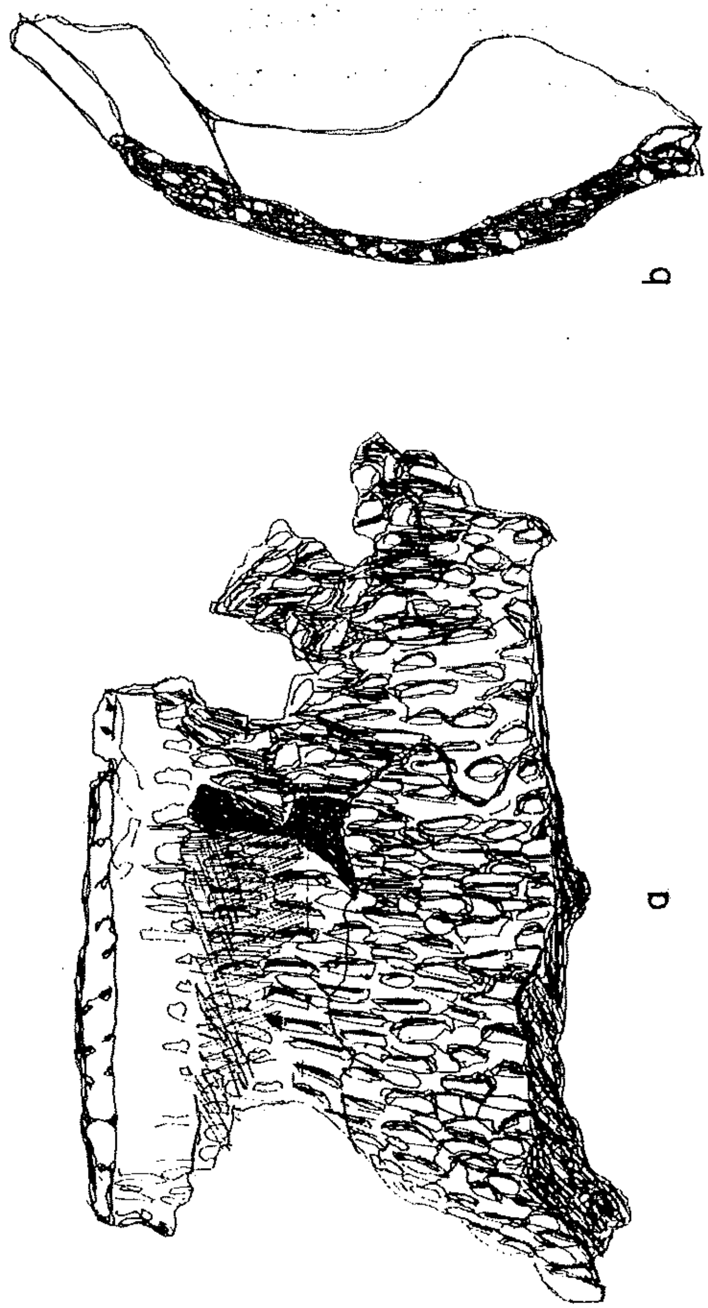


Figure 18. Levanna Cord-on-Cord

a. Exterior, Levanna Cord-on-Cord

b. Side View, Levanna Cord-on-Cord

c. Interior, Levanna Cord-on-Cord

Figure 18

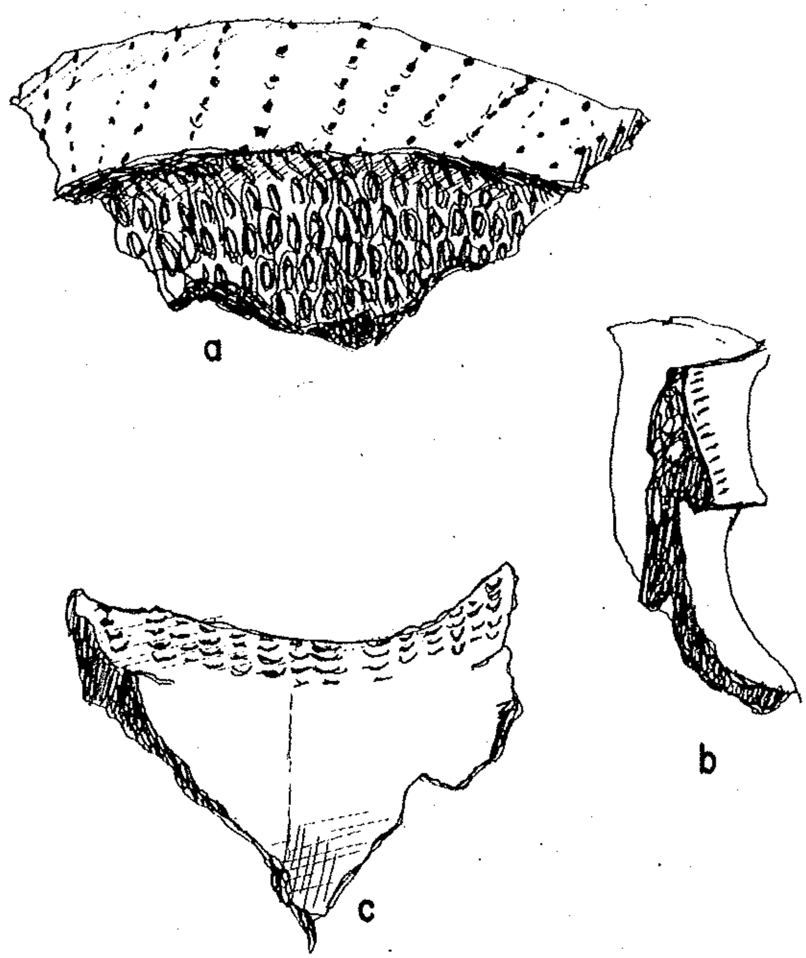


Figure 19. Castle Creek Incised Neck

a. Exterior, Castle Creek Incised Neck

b. Side View, Castle Creek Incised Neck

c. Interior, Castle Creek Incised Neck

Figure 19

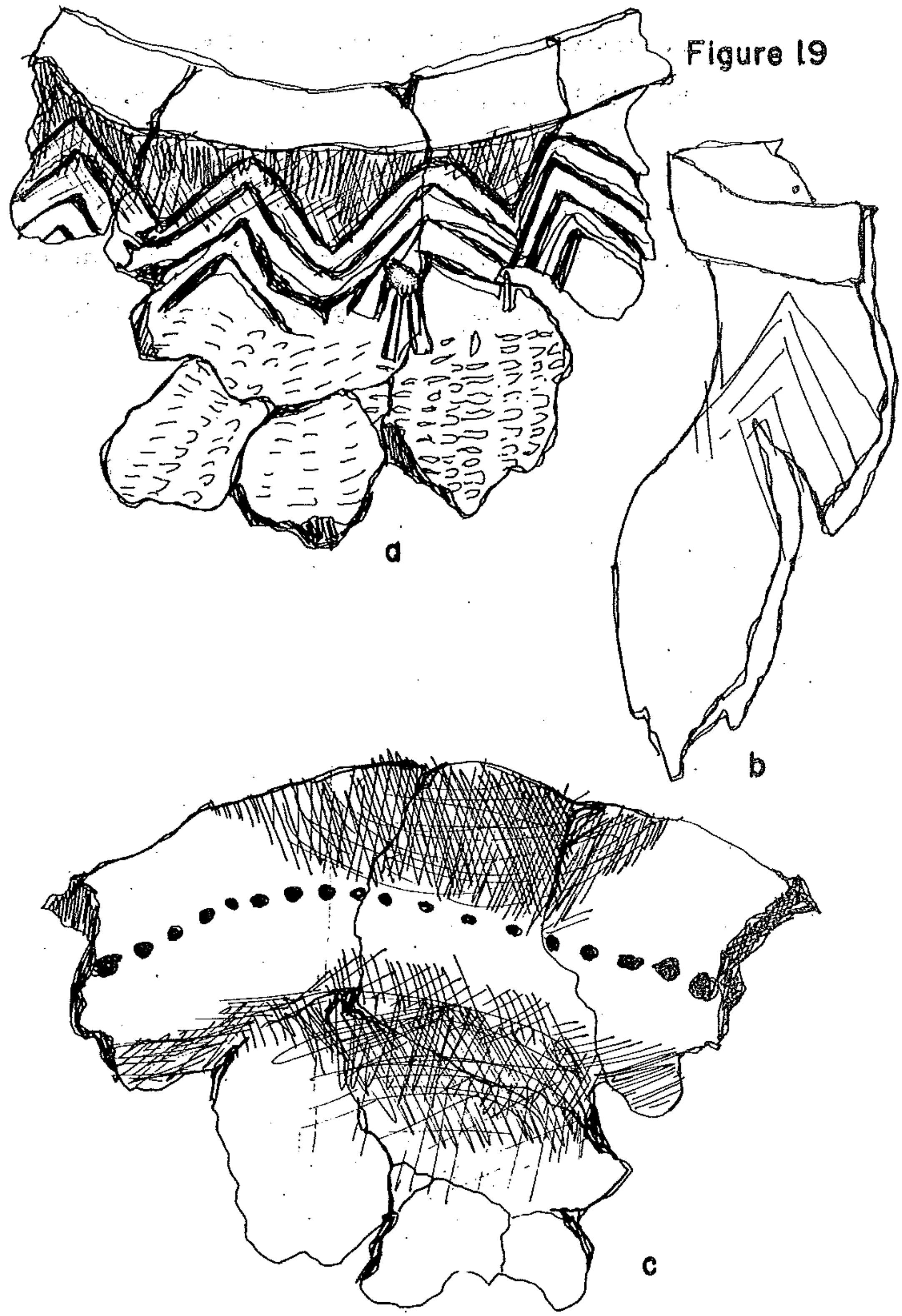


Figure 20. Shenk's Ferry Incised var. Simple

a. Exterior, Shenk's Ferry Incised var. Simple

b. Rim Profile, Shenk's Ferry Incised var. Simple

c. Interior, Shenk's Ferry Incised var. Simple

d. Exterior, Shenk's Ferry Incised var. Simple

e. Rim Profile, Shenk's Ferry Incised var. Simple

f. Interior, Shenk's Ferry Incised var. Simple

Figure 20

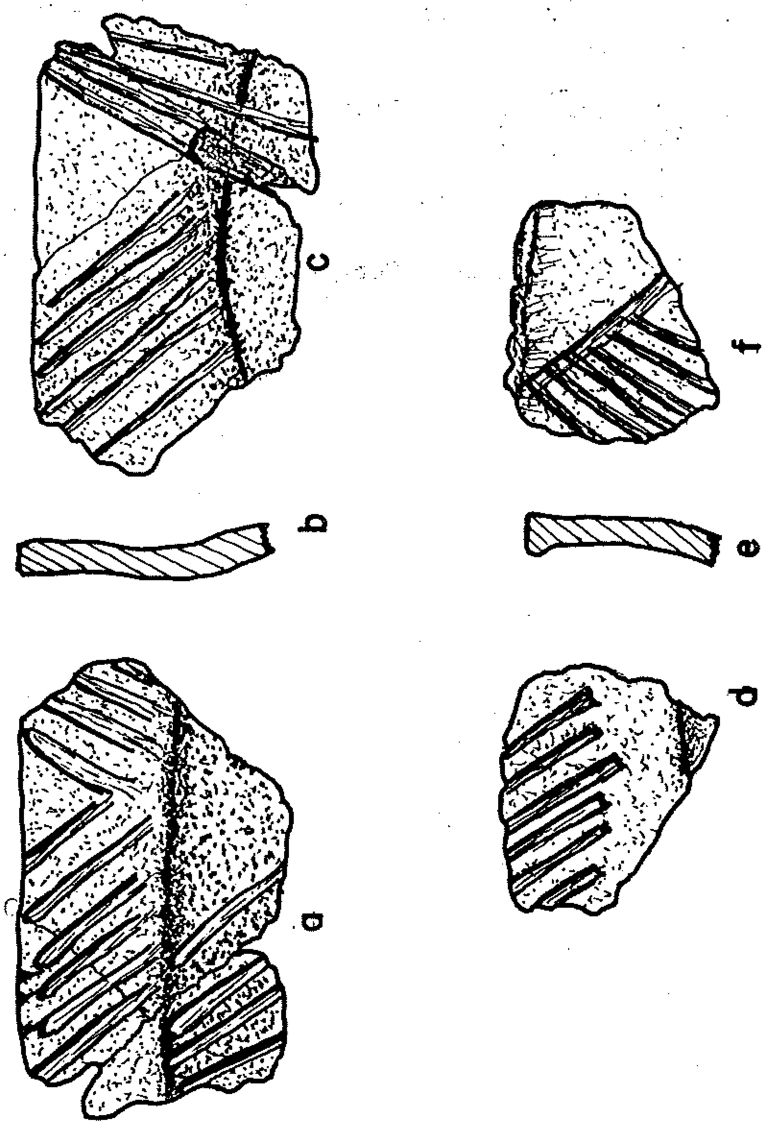


Figure 21. Shenk's Ferry Incised var. Complex

a. Exterior, Shenk's Ferry Incised var. Complex

b. Exterior, Shenk's Ferry Incised var. Complex (Note: "repair" hole)

c. Exterior, Castellated Rim of Shenk's Ferry Incised var. Complex

d. Rim Profile, Castellated Rim of Shenk's Ferry Incised var. Complex

e. Exterior, Shenk's Ferry Incised var. Complex

f. Exterior, Shenk's Ferry Incised var. Complex

Figure 21

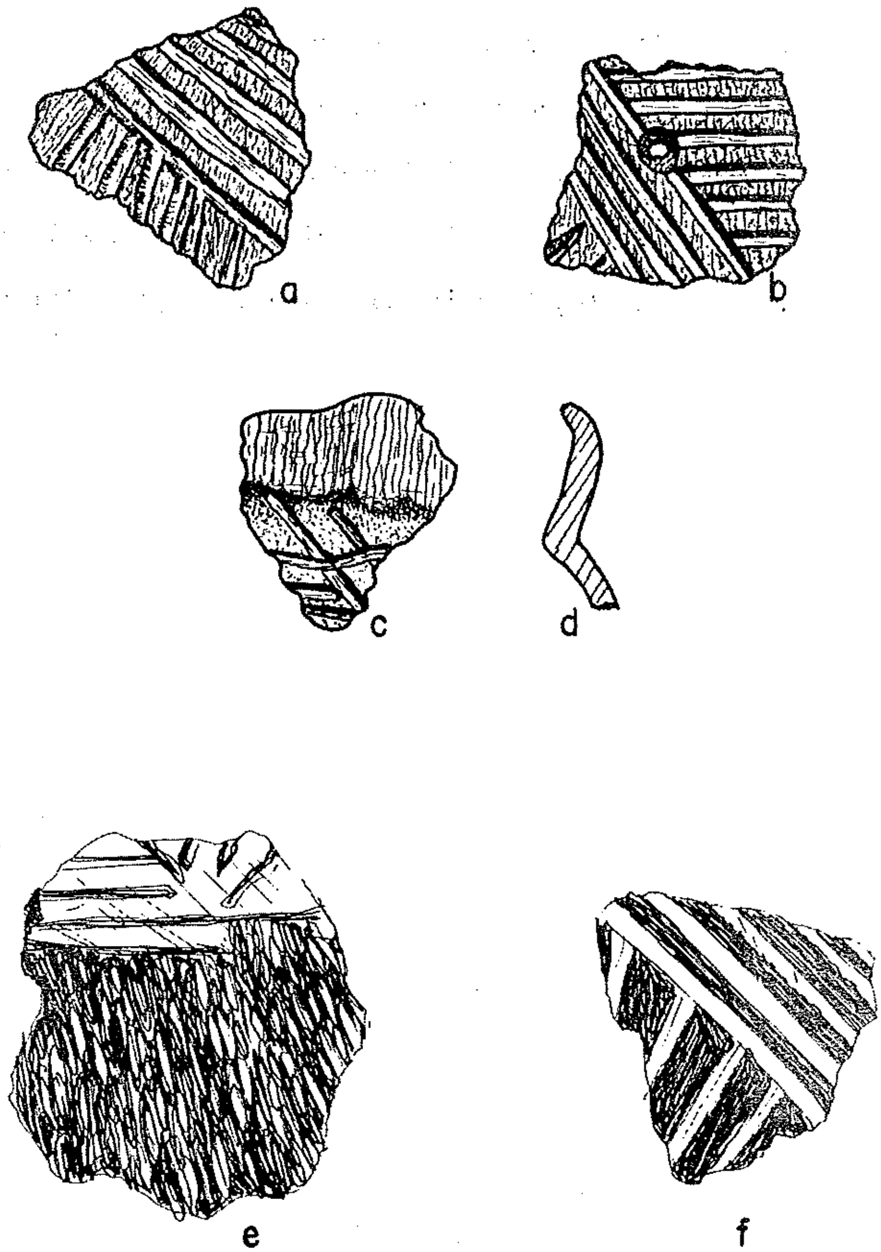


Figure 22. Schultz Incised var. Punctate and Shenk's Ferry Incised var. Multiple Banded

a. Exterior, Schultz Incised var. Punctate

b. Exterior, Schultz Incised var. Punctate

c. Exterior, Schultz Incised var. Punctate

d. Exterior, Shenk's Ferry Incised var. Multiple Banded

e. Rim Profile, Shenk's Ferry Incised var. Multiple Banded

f. Exterior, Shenk's Ferry Incised var. Multiple Banded

g. Rim Profile, Shenk's Ferry Incised var. Multiple Banded

Figure 22

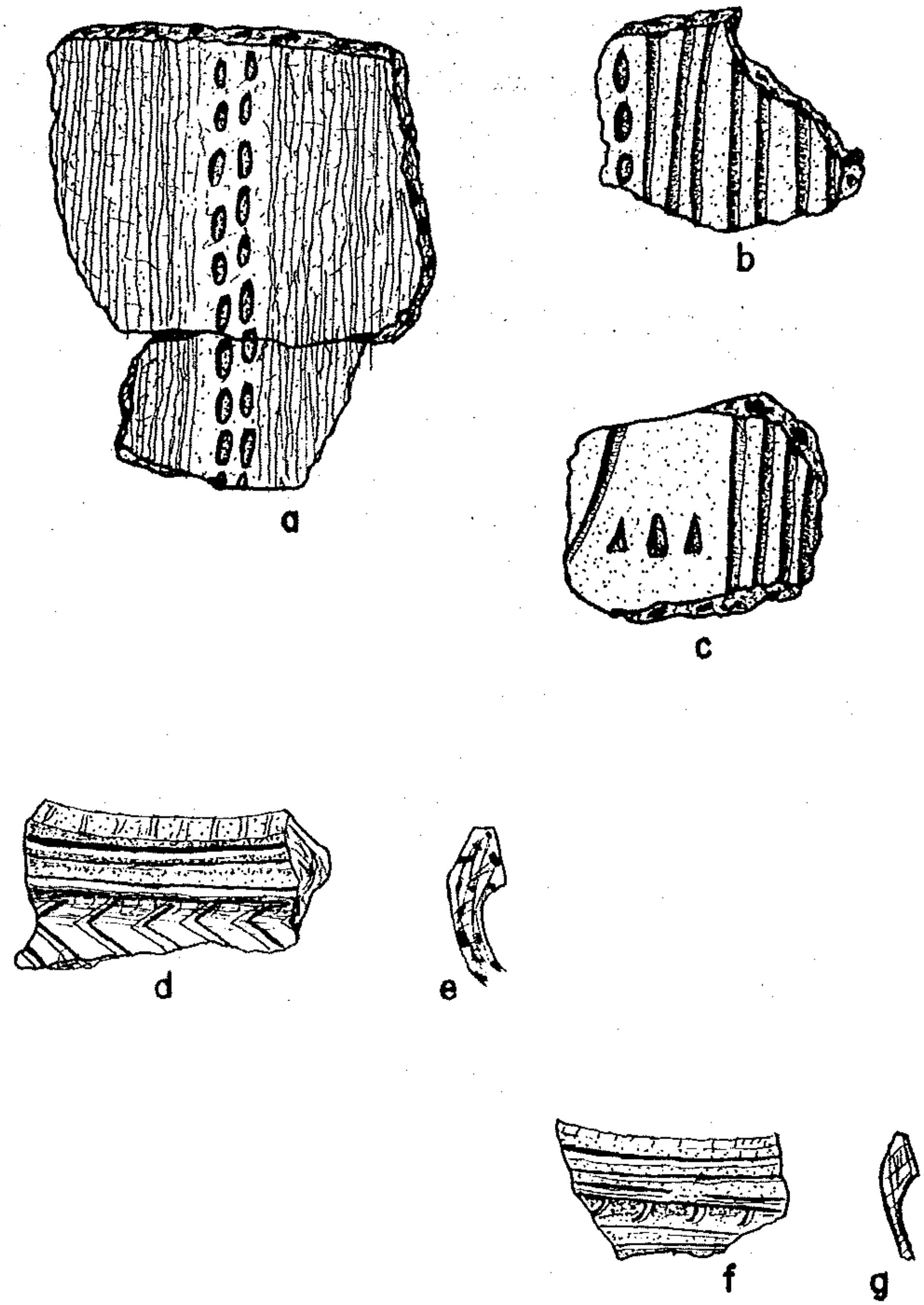


Figure 23. Schultz Incised var. Side Punctate Lip and Schultz Incised var. Notched Lip

a. Exterior, Schultz Incised var. Side Punctate Lip

b. Rim Profile, Schultz Incised var. Side Punctate Lip

c. Exterior, Schultz Incised var. Side Punctate Lip

d. Rim Profile, Schultz Incised var. Side Punctate Lip

e. Side View, Schultz Incised var. Notched Lip

Figure 23

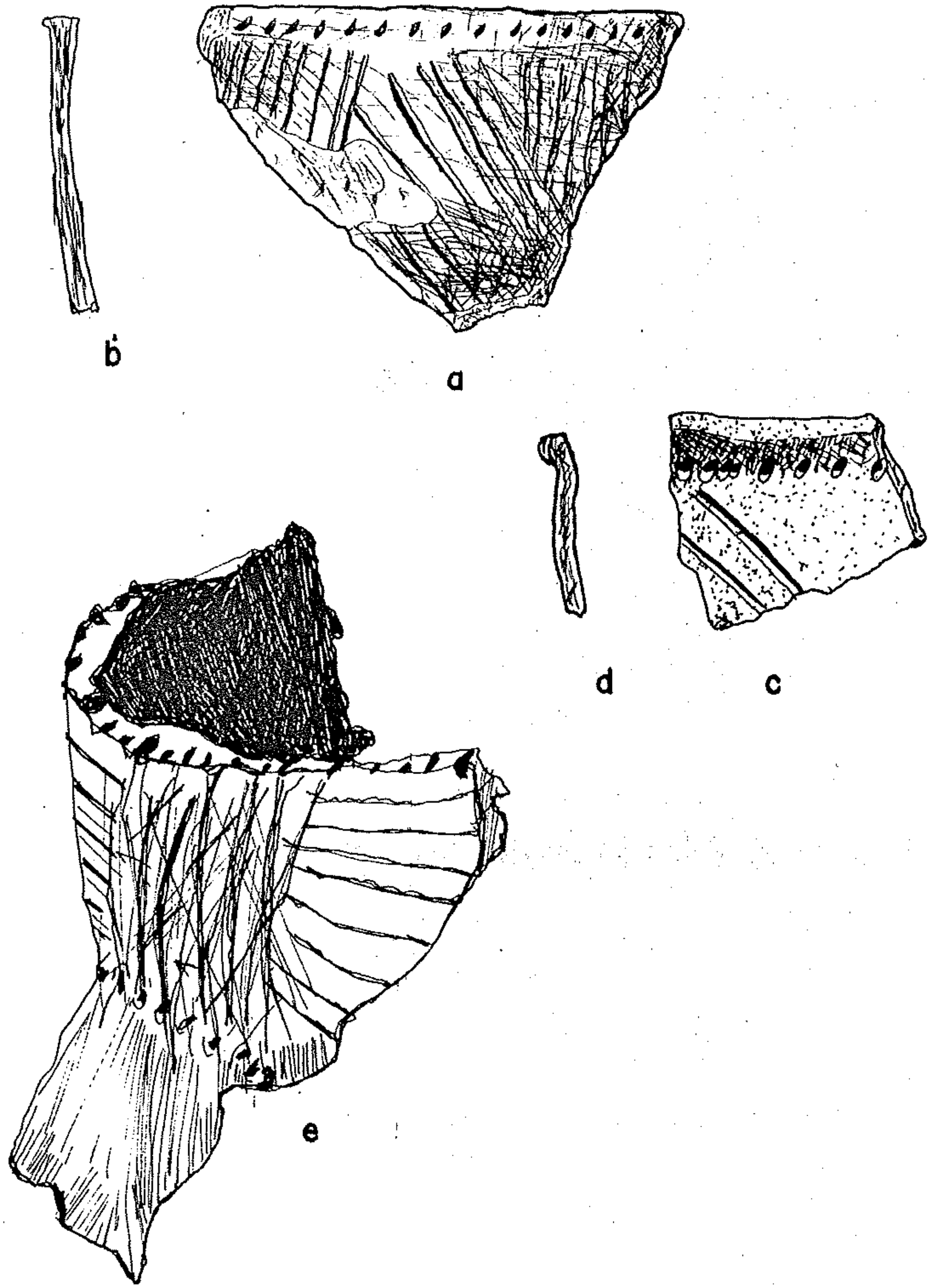
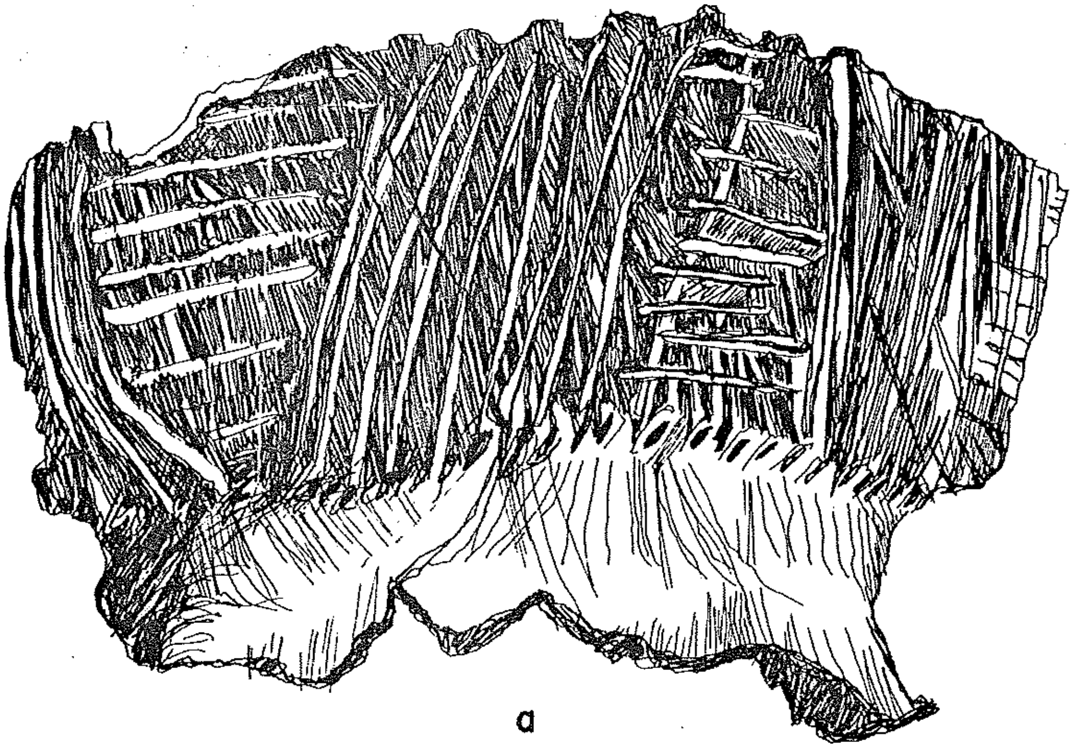


Figure 24. Schultz Incised var. Notched Lip

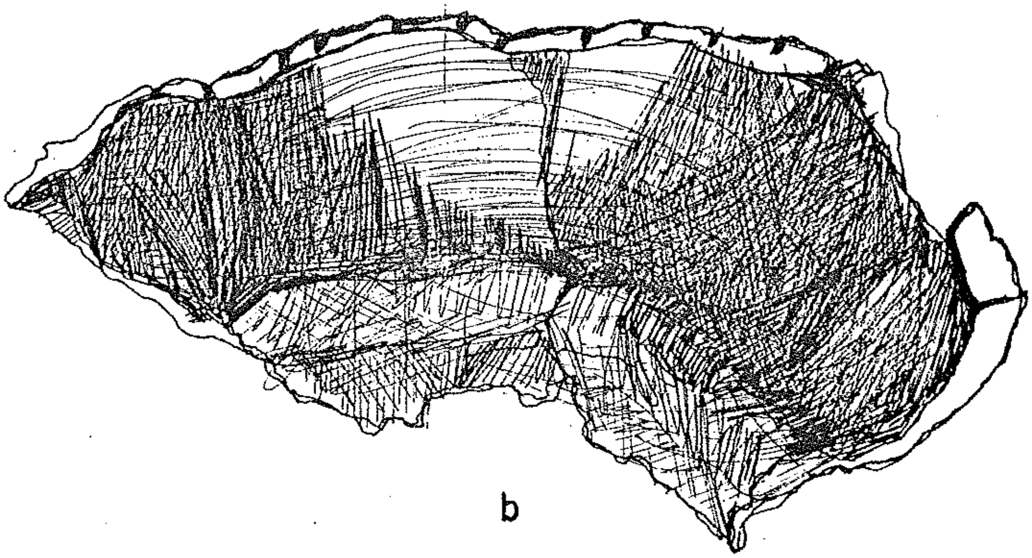
a. Exterior, Schultz Incised var. Notched Lip

b. Interior, Schultz Incised var. Notched Lip

Figure 24



a



b

Figure 25. Miniature Pots

a. Grit Tempered Miniature Pot

b. Rim Profile, Grit Tempered Miniature Pot (a)

c. Shell Tempered (Painted ?) Miniature Pot

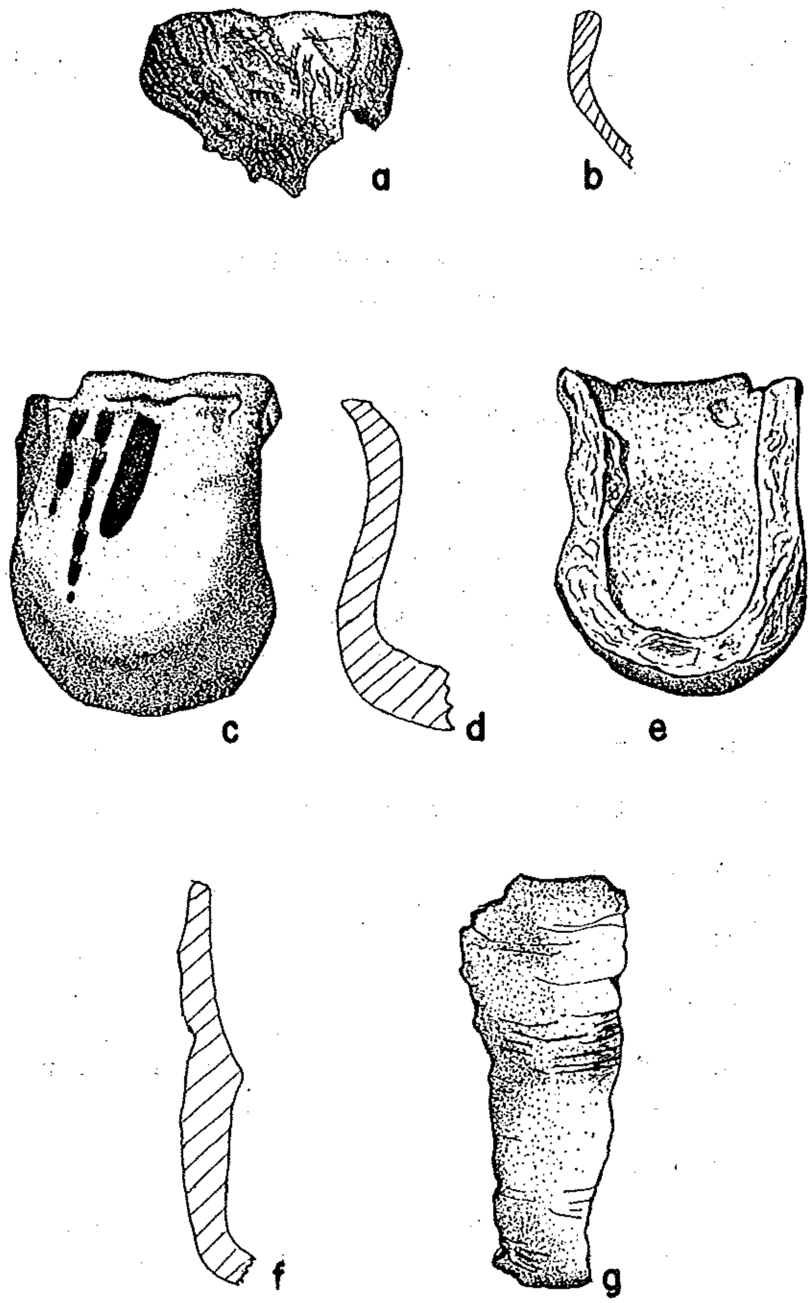
d. Rim Profile, Shell Tempered (Painted ?) Miniature Pot

e. Interior, Shell Tempered (Painted ?) Miniature Pot

f. Rim Profile, Shell Tempered Miniature Pot (g)

g. Shell Tempered Miniature Pot

Figure 25



# POTTERY TYPES ASSOCIATED WITH THE MONONGAHELA RIVER BASIN

## Montague Incised-Punctate (Fig. 26a-1)

PASTE:

Method of Manufacture: Coiled (?) and malleated by a paddle and anvil.

Color: Tan to red

Temper:
Size: Fine (Visual inspection)
Material: Mussel shell
Texture: Platy

SURFACE TREATMENT:

Exterior: Smooth, one example is cordmarked

Interior: Smooth

DECORATION: Bands of incised lines which are diagonal to the lip. These groups of lines are bounded by rows of small, circular punctates. In some cases, the decoration is only rows of round or ovate punctates 2 to 3 mm across, parallel to the rim.

FORM:

Lip: Square

Rim: Straight to slightly outflaring

Neck: Concave

Body: ?

Base: ?

Form: Open-mouth pot and jar forms both appear. Probably some of the jar forms were collard.

Size of Sample: 20

COMMENT: This new type was not found in any of the literature surveyed with the exception of Butler (1939). She states:

> "Six sherds had incised decoration combined with lines of circular indentations, ...which on five of the sherds seem to have been made by a bone or a reed stem; four of these...were of light, porous ware distinctive enough, when taken in conjunction with the unusual decoration, to suggest possible trade pieces" (1939:34).

The four sherds that Butler suggest might be trade sherds are illustrated in Plate 10, a, d, g, and h (1939:33). These sherds appear to be very similar to those sherds found at Sheep Rock. This type, therefore, has been named after the Montague Site (Butler 1939) for their shell tempering and the design motifs which show no similarities with the Susquehannock Basin types lead us to suggest a relationship with the Monongahela Basin. It is probable that another locus for this type will be found. Conversation with Mayer-Oakes has suggested the possibility that this is a miniature pot type (1966). It also appears that this type might have several varieties.

Monongahela Cordmarked (Fig. 27a-d)

PASTE:

Method of Manufacture: Coiled and then malleated with a paddle and anvil.

Color: Tan to red

Temper:

Size: Fine (Visual inspection)
Material: Mussel shell
Texture: Platy

SURFACE TREATMENT:

Exterior: Cordmarked with some smoothing

Interior: Smoothed

DECORATION: Little or none but several examples have what appear to be fingernail impressions diagonally along the lip.

FORM:

Lip: Square or rounded

Rim: Slightly outflaring

Neck: Concave

Body: ?

Base: ?

Form: Open mouth pot

Size of Sample: 6

COMMENT: This variety is well within the range of Monongahela Cordmarked as described by Mayer-Oakes (1955:197-198). The Monongahela Cordmarked along with Montague Punctate-Incised and Raystown Plain do not appear to be of local manufacture or design motif and could probably be classed as "trade sherds."

Raystown Plain (Fig. 27e-h)

PASTE:

Method of Manufacture: Coiled (?) then malleated with paddle and anvil.

Color: Tan

Temper:

Size: Fine (Visual inspection)
Material: Mussel shell
Texture: Platy

SURFACE TREATMENT:

Both the exterior and interior are smooth but faint cordmarking is visible on the exterior surface.

DECORATION: There is none except for a row of ovate punctates just below the lip.

FORM:

Lip: Square

Rim: Straight to inflaring

Neck: Convex

Body: ?

Base: ?

Form: Bowl

Size of Sample: 4

COMMENT: This type is anomalous to the area. While it is shell tempered it does not fit any of the Susquehannock types nor does it fall into the Monongahela types. This was confirmed by Mayer-Oakes (1966). The unique form appears to have relations to the south but cannot be associated with any particular ceramic tradition. Possibly it is related to some of the New River tradition types that Witthoft states have been found on the Raystown Branch of the Juniata except that they are limestone tempered as opposed to shell tempered (1952:18).

Conclusions

The presence of these types associated with the Monongahela River Basin is not unusual, and in a preliminary report would normally be dismissed as "trade sherds." The term "trade sherd" in itself is objectionable for it implies a commercial activity or at least contact between two specific groups in a more or less one-to-one relation. This might not necessarily be the case for intermediaries, war captives (especially women), exogamy, etc. could have introduced any number of pottery styles foreign to a given area. "Trade sherds" have also been used to account for sherds that are otherwise unidentifiable. For these reasons we prefer to avoid the term "trade sherds" and postulate that since they are found in insignificant numbers at Sheep Rock, one of several things could have occurred.

It is entirely possible that Sheep Rock was located on a major channel of communication and that new design concepts were introduced occasionally from the west and for one reason or another fell out of use. Another possibility is that there was a center a short distance south of the Sheep Rock area which had developed a somewhat independent ceramic tradition. This tradition would include a combination of Susquehanna Basin and Monongahela Basin types and in addition, southern types into which would fall Montague Incised-Punctate and Raystown Plain. This area would probably be in the headwaters of the Raystown Branch of the Juniata and Monongahela, and is accounted for by the presence of Montague Incised-Punctate at the Montague Site and Sheep Rock but not in either of the main river valleys, i.e. the Susquehanna or the Monongahela. It is felt that this hypothesis would warrent investigation in any future survey work.

Figure 26. Montague Incised-Punctate

a. Exterior, Montague Incised-Punctate

b. Rim Profile, Montague Incised-Punctate

c. Exterior, Montague Incised-Punctate

d. Rim Profile, Montague Incised-Punctate

e. Exterior, Montague Incised-Punctate

f. Exterior, Montague Incised-Punctate

g. Rim Profile, Montague Incised-Punctate

h. Exterior, Montague Incised-Punctate

i. Rim Profile, Montague Incised-Punctate

j. Exterior, Montague Incised-Punctate

k. Exterior, Montague Incised-Punctate

l. Exterior, Montague Incised-Punctate

Figure 26

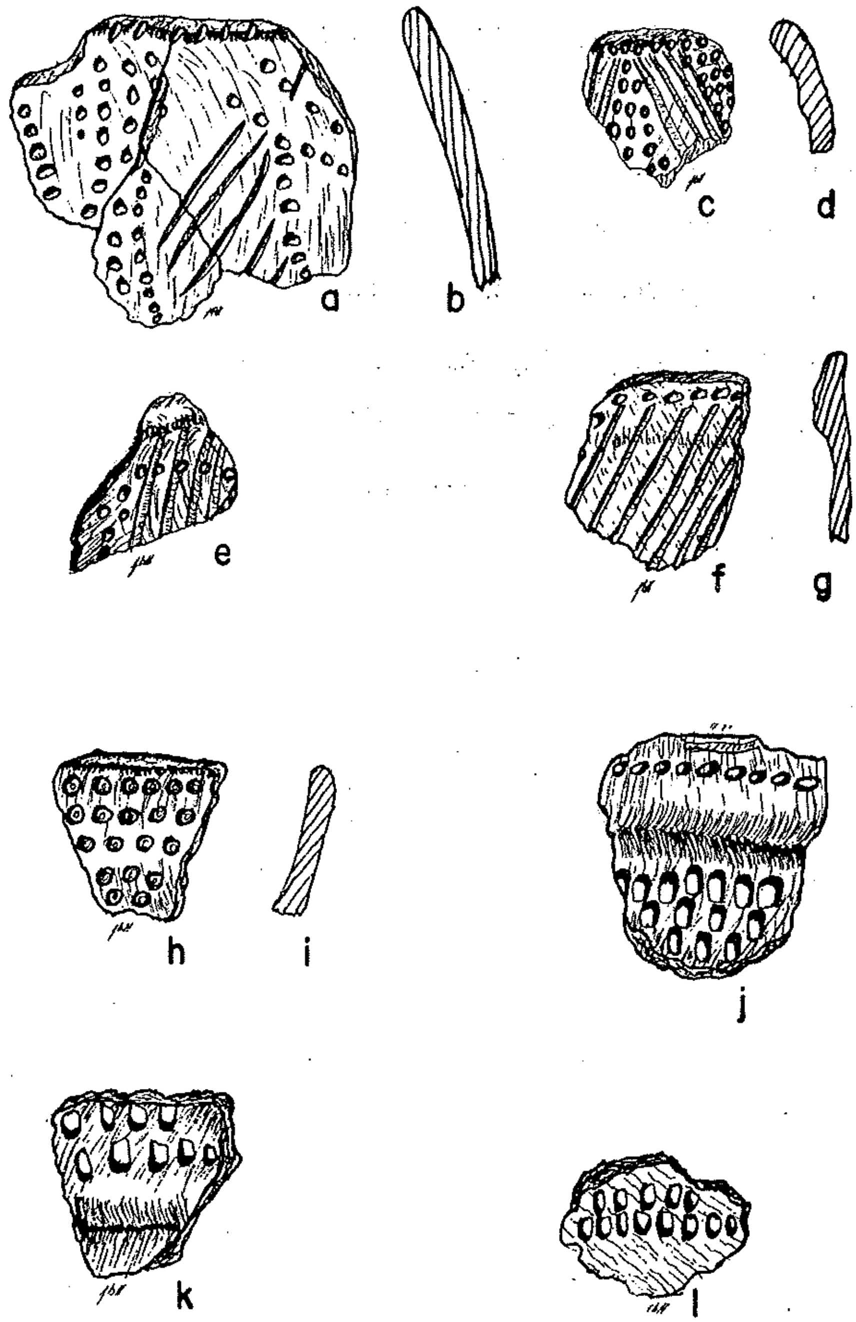


Figure 27. Monongahela Cordmarked and Raystown Plain

a. Exterior, Monongahela Cordmarked

b. Rim Profile, Monongahela Cordmarked

c. Exterior, Monongahela Cordmarked

d. Rim Profile, Monongahela Cordmarked

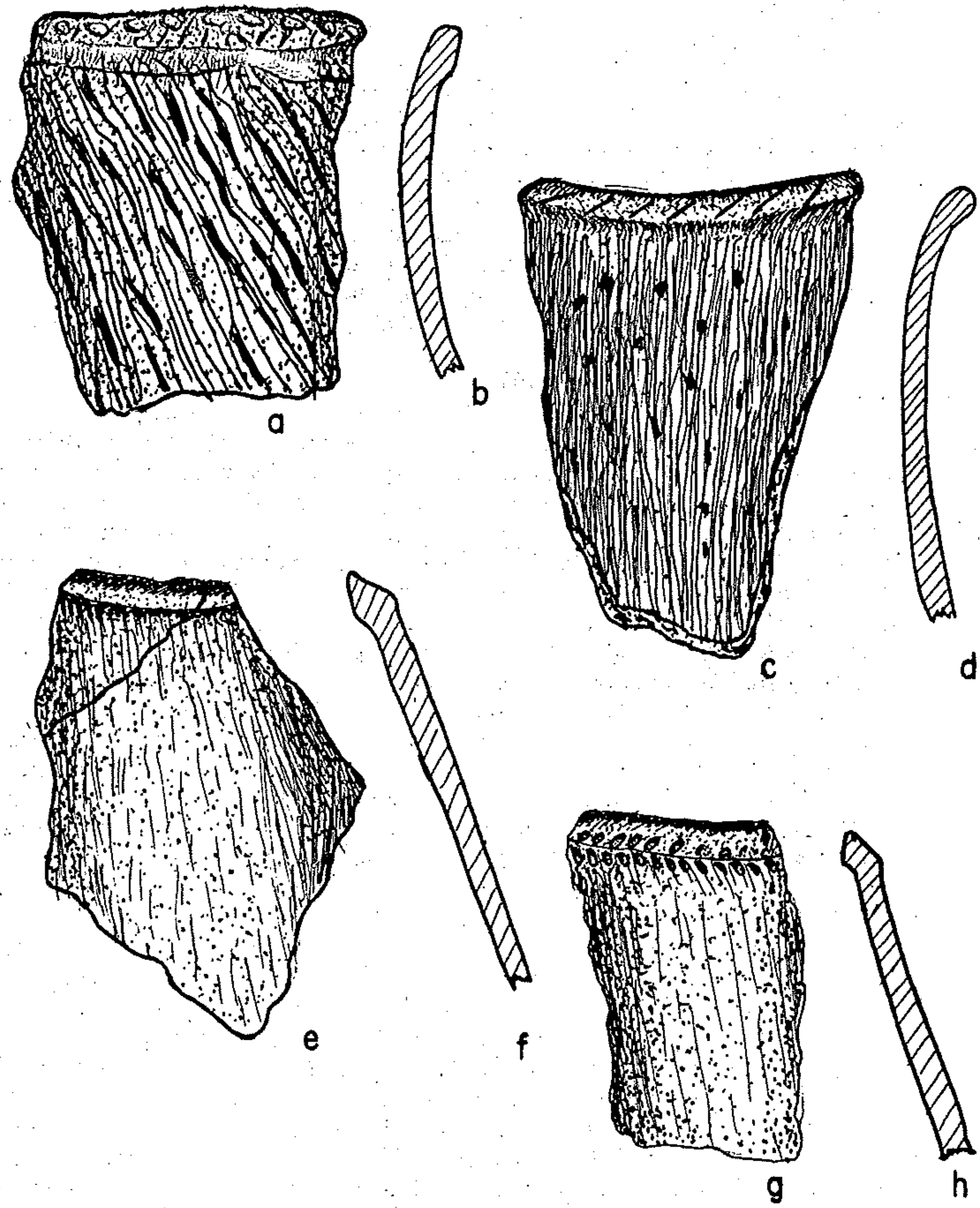
e. Exterior, Raystown Plain

f. Rim Profile, Raystown Plain

g. Exterior, Raystown Plain

h. Rim Profile, Raystown Plain

Figure 27



# CERAMIC PIPES

## Introduction

The following is a description of the ceramic pipes recovered at Sheep Rock during the last seven years of excavation. The eighteen pipe fragments found were divided into three categories: bowl, angle, and stem fragments, all of which are from the later Woodland periods. The pipes have been described according to their temper, color, decoration, and various linear measurements. While very few cultural associations have been established, some hypotheses have been advanced concerning functions, habits, and the tobacco used by the aboriginal inhabitants of Sheep Rock.

## Angle Fragments (Fig. 28a,d)

The angle fragments represent obtuse-angle pipes which are more commonly referred to as elbow pipes. They range in color from brown to grey and black and are decorated by either cord-marking or punctation. The decoration on one of the examples is indeterminate (see Table IV). The paste ranges from a calcereous clay with no temper or a chert temper to one with a fine shell temper. In all cases, the paste of the ceramic pipes was much finer than that of the pottery of Sheep Rock. The wall thickness of the angle fragments averages between 3 and 4 mm while the internal depth of the bowls is from 20 to 30 mm (see Table V). The external height of the bowl ranges from 25 to 37 mm with a maximum external diameter range of 20 to 26 mm and a minimum external diameter range of 18 to 20 mm. The outer diameter of the bowl at the mouth ranges from 17 to 23 mm and the inner diameter at this same position varies from 12 to 17 mm. The angle formed by the bowl and the stem ranges from 90 to 141 degrees.

Witthoft and Kinsey (1952-1961) report that pipe number A66.1.158 (Fig. 28d,e) was found in association with Shenk's Ferry pottery and therefore it has been assigned to the Shenk's Ferry period. Small triangular points and Susquehannock sherds were found with pipe number A66.1.23. This pipe and pipe number A66.1.1987 (Fig. 28a) are assumed to be of the Susquehannock period (Witthoft and Kinsey 1952-1961). It should be noted that both of these fragments (A66.1.23 and A66.1.1987) can be fitted together but are not of the typical shell-tempered paste of Susquehannock pottery. There are no associations for pipes A66.1.1586 and A66.1.5757.

## Bowl Fragments (Fig. 28b, c; Fig. 29c, d)

The bowl fragments tend to be made of siliceous clay without temper although dolomitic clay was observed in one example and chert was employed as an aplastic in two (see Table VI). Their color is brown or grey and they are decorated with punctating, incised lines or cordmarking. The bowl fragments vary in thickness from 5 to 7 mm. The width and length are relatively insignificant as these measurements do not give a true indication of the bowl size since they are estimations calculated from fragments.

Pipe number A66.1.1589 (Fig. 29d,e) was found in association with a potsherd which was decorated with paddle-edge cordmarking and was assigned to the Owasco period (Witthoft and Kinsey 1952-1961). Information concerning the associations of pipes A66.1.1590 (Fig. 29c), A66.1.4493 (Fig. 28c), A66.1.1592, and A66.1.1591 was not noted.

Stem Fragments

The stem fragments conform to the bowl fragments in paste, color, and temper (see Tables 7, 8, and 9). As was true of the bowl fragments, the length of the stem fragment is not indicative of its true length, but it has been estimated that the pipe stems of Sheep Rock were approximately 40 to 50 mm in length. Only one complete stem was found (A66.1.1586) and it is so short (29 mm) that it does not appear to have been used alone but rather with a hollow reed or bone inserted into it to serve as a "secondary" stem. It should be noted that the length of A66.1. 1586 does not conform to the more typical lengths indcated by the other stem fragments. The outer stem diameter varies from 8 to 15 mm with the inner diameter ranging from 3 to 6 mm. As both centered and off-centered hole positions can be observed the position of the hole in relation to the cross section of the stem does not seem to have been controlled. The cross-section of the stem varied from round to elliptical and even rectangular. None of the stems are decorated and none of the mouthpieces have bits, however, one of the mouth piece fragments (A66.1.11) does exhibit working around the mouthpiece or distal end. It is postulated that, at least in some instances, pieces of broken pipe stems were reworked into beads.

Decoration (Fig. 28b-d; Fig. 29a-e)

Three methods of decoration were employed to decorate the pipes recovered at Sheep Rock. These were: punctating [A66.1.1588 (Fig. 28d,e) and A66.1.1590 (Fig. 29c)]; incising [A66.1.1590 (Fig. 29c)]; and cordmarking [A66.1.1586 (Fig. 29a, b), A66.1.1589 (Fig. 29d), A66.1.1592 (Fig. 28b), and A66.1.4493 (Fig. 28c)]. As noted before, none of the stems are decorated and designs appear to be confined to the bowls. All of the designs are abstract in nature.

The Shenk's Ferry example [A66.1.1588 (Fig. 28d,e)] has four punctates on one side which are not present on the other. A combination of techniques was used on one of the Owascoid examples [A66.1.1590 (Fig. 29c)]. The rim of the bowl was decorated by incising while the rest of the bowl appears to have been punctated with an elaborate design. The other Owascoid bowl fragment [A66.1.1589 (Fig. 29d,e)] is decorated with a paddle-edge cordmarking which is not confined to either the body or the rim but transgresses both areas. The design on the body of the bowl is a type of edge-stamped cordmarking diagonal to the rim while the rim decoration consists of a vertical paddle-edge cordmarking. This is highly reminiscent of the pottery type, Owasco Platted. Some spalding has occurred which could possibly be due to limestone intrusions.

Besides not having any associations, A66.1.4493 (Fig. 28c) and A66.1.1592 (Fig. 28b) are too small to project any total design. The incising on A66.1.1592 (Fig. 28b) appears to have surrounded the mouth of the bowl as a modification of the rim motif.

The organization of design of A66.1.1589 [Owascoid (Fig. 29d,e)] and A66.1.4493 [no association (Fig. 28c)] is less precise than that of the other Owascoid fragment [A66.1. 1590 (Fig. 29c)], the Shenk's Ferry example [A66.1.1588 (Fig. 28d,e)], or A66.1.1586 [no association (Fig. 29a,b)].

Another form of decoration which has not been previously noted is burnishing. Both A66.1.1586 [no association (Fig. 29a,b)] and A66.1.1987 (Susquehannock) appear to have been burnished.

Two bowls were undecorated. One is very crude and thick [A66.1.1595 (no association)] while the other [A66.1. 1987 - Susquehannock (Fig. 28a)] is finer in quality. The undecorated pipe fragments show greater signs of use. It is possible that the non-decorated pipes were used for "pleasure smoking" while the decorated pipes functioned in a ceremonial context. It should be noted that there is some discussion as to whether or not tobacco was smoked by aboriginal Americans for pleasure in prehistoric Eastern North America. Some authors feel that "pleasure smoking" was introduced or reintroduced by Europeans. The data from Sheep Rock seems to support this hypothesis for the Susquehannocks were historic and did have contact with Europeans. However, only one trade item (a white, glass seed bead) was recovered at Sheep Rock and the sample of pipes is not large enough to warrant any positive conclusions. There is the additional possibility that the more precisely organized designs were more ritalistic than those which were less well organized.

## Temper

The methods employed to identify the temper were: chemical, microscopic, and petroscopic. In many cases the paste used for making the pipes was so fine that it was almost impossible to identify the temper to any degree of certainty. For some fragments, traces of quartz or chert were tentatively identified as the aplastic. For the last two possibilities the clay type is described in the column labeled "temper" in the tables. Shell tempering is quite obvious and appears to be similar to, though finer than, that used in the shell tempered pottery.

The paste used in the manufacture of the pipes was very fine either because it was easier to work with or, assuming the pipes were ritualistic in nature, because much greater care was taken in their manufacture.

Manufacture

Marks on the inner surface of the bowl of A66.1.23 (Susquehannock) indicate that the bowls of the pipes, at least of this period, were scooped out from a solid lump of clay with a twig or reed.

"Types"

Two Owascoid bowls [A66.1.1590 (Fig. 29c) and A66.1.1589 (Fig. 29d)], one Shenk's Ferry bowl and angle fragment [A66.1.1588 (Fig. 28d,e)], and one Susquehannock bowl and angle fragment [A66.1.1987 (Fig. 28a) and A66.1.23] were identified by Witthoft and Kinsey (1952-1961). Unfortunately, the literature has not been researched fully to establish any other affinities. However, this will be accomplished for the completed report.

It is interesting to note that no tubular or platform pipes were recovered which indicates that pipes did not develop at Sheep Rock but rather that the complete tobacco complex was introduced during Owascoid times.

A66.1.1586 (Fig. 29a,b) differs to a high degree from the other pipes of this discussion. The stem is rectangular, there is a definite "joint" between the stem and the bowl, the base of the bowl is flattened, and the bowl is elliptical. This pipe might indicate trade with the Monongahela Basin for some aspects of it (the flattened base of the bowl, for example) resemble Monyock plain pipes found in the Monongahela complex of the upper Ohio River valley (Mayer-Oakes 1955).

Tobacco

*Nicotina rustica* may have been the tobacco used in the pipes of Sheep Rock for this species is native to the Sheep Rock area (Setchell 1922) as supported by ethnographic evidence. It is interesting to note that Driver (1961) points out that tobacco was often adulterated with various substances such as sumac leaves and the inner bark of certain species of dogwood. These mixtures were referred to as *kinnikinnik* (an Algonquian word) and have been found in the Eastern United States and Canada (Driver 1961:90).

## Conclusions

There are very few conclusions which can be reached from this report. The explanation is very simple, the authors did not have enough time to research the literature fully and correlations with the stratigraphy of the site were not possible. Several positive statements can be made however. The tobacco complex was introduced during Owascoid times with elbow pipes since there is no indication of tubular or platform pipes which would indicate an earlier development. The temper, color, and paste along with the decoration seem to conform to the pottery industries of each given time period although the pipes are of much finer quality. This is assumed to imply the ceremonial nature of their function. The only exception to this is the Susquehannock examples which might indicate a "dualistic" pipe industry, that is, pipes that were used for "pleasure smoking" and those of a ceremonial nature. Although this is a preliminary report, it is expected that a great number of the ceramic pipes can be correlated with those of the surrounding areas.

Figure 28. Ceramic Pipe Fragments

a. Susquehannock Angle Fragment (A66.1.1987)

b. Bowl Fragment (no association) (A66.1.1592)

c. Bowl Fragment (no association) (A66.1.4493)

d. Shenk's Ferry Angle Fragment (A66.1.1588)

e. Projected Design of A66.1.1588 (no. 'd')

Figure 28

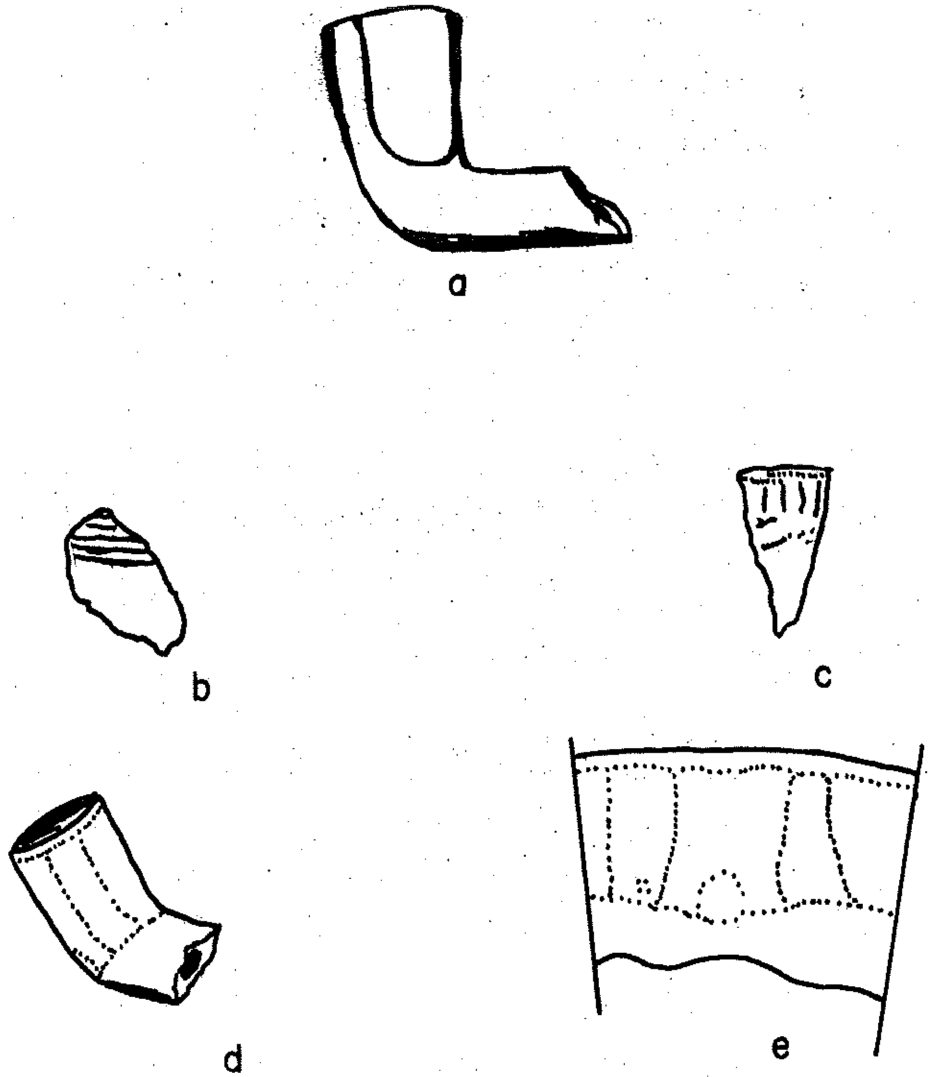


Figure 29. Ceramic Pipe Fragments

a. Complete Pipe (no association) (A66.1.1586)

b. Projected Design of A66.1.1586 (no. 'a')

c. Owascoid Bowl Fragment (A66.1.1590)

d. Owascoid Bowl Fragment (A66.1.1589)

e. Projected Design of A66.1.1589 (no. 'd')

Figure 29

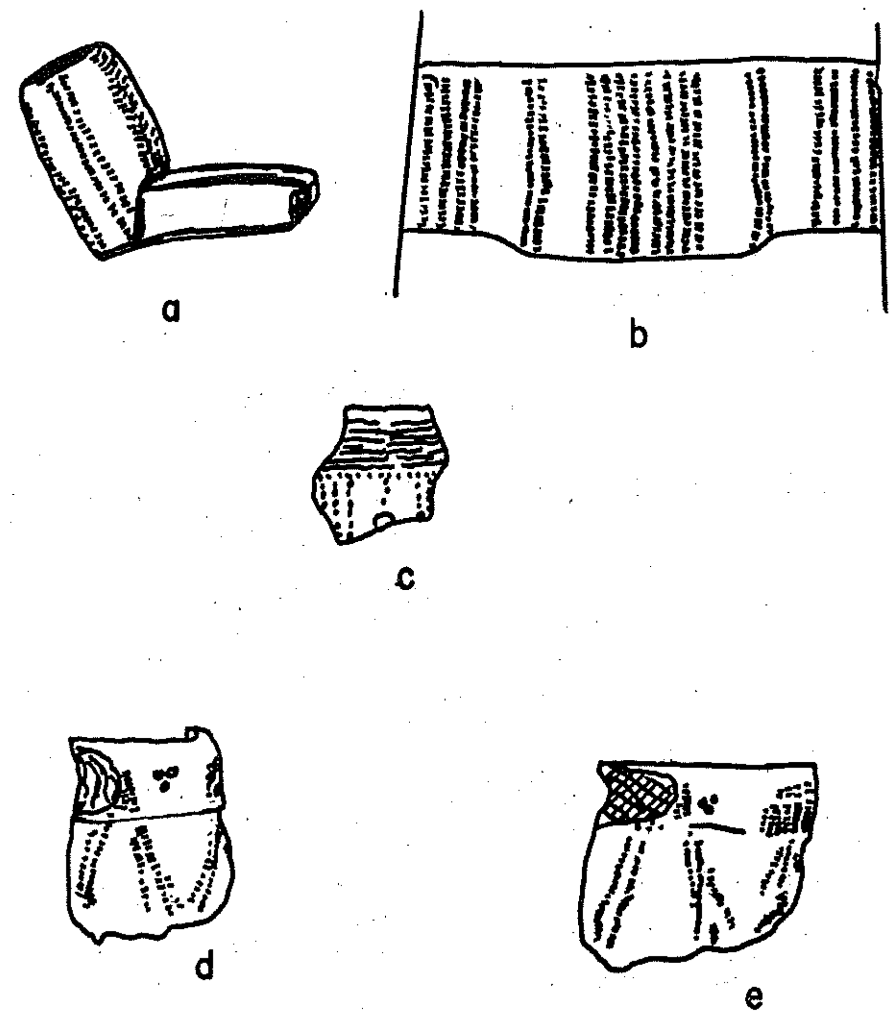


Table 4

PIPE ANGLE FRAGMENTS

| | | | | |
|---|---|---|---|---|
| Catalogue Number | A66.1. 1586 | A66.1. 1588 | A66.1. 5757 | A66.1. 1987 & 23 |
| Temper | Calcareous Clay - No Temper | Fine Shell | Shell | Calcareous Clay - Chert Temper |
| Color | Brown | Grey | Black | Brown |
| Decoration | Cordmarking | Punctation | Indeter- minate | None |
| Provenience | 0 - S 20 56" BD | W 15 - S 20 66-72" BD | W 50 - S 20 122" BD | W 30 - S 10 10-15" BD |
| Cultural Association | Unknown | Shenk's Ferry | Unknown | Susquehan- nock |

Table 5

ANGLE FRAGMENTS
(Bowl Measurements*)

| Catalogue Number | A66.1. 1586 | A66.1. 1588 | A66.1. 5757 | A66.1. 1987 & 23 |
|---|---|---|---|---|
| Thickness | 4.0 | 3.0 | 4.0 | 3.0 |
| Internal Depth | 27.0 | 21.5 | --- | 29.5 |
| External Height | 30.0 | 25.0 | --- | 36.5 |
| Maximum External Diameter | 26.0 | 20.0 | --- | 21.0 |
| Minimum External Diameter | 19.5 | 18.0 | --- | 20.0 |
| Outer Diameter of Bowl at Mouth | 23.0-17.0 | 20.0-17.5 | --- | 21.0-20.0 |
| Inner Diameter of Bowl at Mouth | 23.0-11.5 | 14.0-12.0 | --- | 17.0-15.0 |
| Angle of Bowl to Stem | 119° | 132° | 141° | 90° |

*All measurements in millimeters.

Table 6

PIPE BOWL FRAGMENTS AND MEASUREMENTS*

| Catalogue Number | A66.1.1592 | A66.1.1590 | A66.1.4493 | A66.1.1591 | A66.1.1589 |
|---|---|---|---|---|---|
| Temper | Siliceous Clay – No Temper | Chert | Siliceous Clay – No Temper | Siliceous Clay – No Temper | Dolomitic Clay – Chert Temper |
| Color | Brown | Brown | Grey | Grey | Brown |
| Decoration | Incising | Incising & Punctating | Cordmarking | None | Cordmarking |
| Provenience | 0 – S 25 Surface | Surface | W 5 – S 10 3.55–3.88" BD | E 15 – S 10 Level 2c | E 10 – S 15 Level 2 |
| Thickness | 5.0 | 4.0 | 3.0 | 7.0 | 3.5 |
| Length | 21.5 | 21.0 | 24.0 | 18.0 | 31.0 |
| Width | 12.0 | 13.5 | 8.5 | 18.0 | 24.0 |
| Cultural Association | Unknown | Owascoid | Unknown | Unknown | Owascoid |

*All measurements in millimeters.

Table 7

STEM FRAGMENTS AND MEASUREMENTS*
(from Angle Fragments)

| | | | | |
|---|---|---|---|---|
| Catalogue Number | A66.1. 1586 | A66.1. 1987 | A66.1. 5757 | A66.1. 1588 |
| Length of Fragment | 29.0 | 23.0 | 19.0 | 11.5 |
| Diameter at Ends | 11.0 - 9.0 | 13.0 - 12.0 | 15.0 - 13.0 | 15.0 - 13.0 |
| Diameter of Hole | 4.0 | 5.0 | 5.0 | 5.0 |
| Position of Hole | Off Center | Off Center | Center | Center |
| Shape of Stem | Rectangular | Elliptical | Round | Round |

*All measurements in millimeters.

Table 8

PIPE STEM FRAGMENTS AND MEASUREMENTS*
(from Mouth-Piece Stems)

| | | | | | |
|---|---|---|---|---|---|
| Catalogue Number | A66.1.1595 | A66.1.1596 | A66.1.7979 | A66.1.11 | A66.1.1594 |
| Temper | Siliceous Clay - Chert Temper | Shell Temper | Siliceous Clay | Dolomitic Clay - No Temper | Shell Temper |
| Color | Brown | Grey | Brown | Brown | Brown |
| Provenience | W 30 - S 15 | None Given | None Given | E 30 - S 10 10-15" BD | E 20 - S 5 Level 7 |
| Length of Fragment | 32.0 | 42.5 | 24.0 | 22.0 | 27.0 |
| Diameter at Ends | 14.0-9.5 | 10.0-8.5 | —— | 12.5-11.0 | 13.0-10.0 |
| Diameter of Hole | 5.5 | 3.5 | —— | 6.0 | 3.5 |
| Position of Hole | Off Center | Off Center | —— | Center | Off Center |
| Shape of Stem | Elliptical | Elliptical | —— | Round | Elliptical |

*All measurements in millimeters.

Table 9

PIPE STEM FRAGMENTS AND MEASUREMENTS*
(from Stem Fragments)

| | | | | |
|---|---|---|---|---|
| Catalogue Number | A66.1. 2310 | A66.1. 10 | A66.1. 1593 | A66.1. 3719 |
| Temper | Siliceous Clay-Quartz Traces | Siliceous Clay-Quartz Traces | Siliceous Clay-Shell Temper | Shell Temper |
| Color | Brown | Grey | Grey | Grey |
| Provenience | W 5 - S 10 60" BD | E 30 - S 10 10-15" BD | W 30 72-78" BD | W 40 - S 15 |
| Length of Fragment | 44.0 | 34.0 | 27.0 | 21.0 |
| Diameter at Ends | 11.5-10.0 | 12.0-11.0 | 11.0-10.0 | 13.5-12.0 |
| Diameter of Hole | 4.0 | 4.0 | 5.0 | 3.0 |
| Position of Hole | Center | Off Center | Off Center | Off Center |
| Shape of Stem | Round | Elliptical | Elliptical | Round |

*All measurements in millimeters.

# LITHIC ARTIFACTS FROM SHEEP ROCK

by

Carl A. Bebrich

# ABSTRACT

In this chapter a detailed description of the various components of the Sheep Rock shelter lithic inventory is given. Stratigraphic distribution, age and cultural affinity of diagnostic forms are discussed. Some aspects of stratigraphic integrity are examined and general problem areas identified. Appendices containing a comprehensive coded attribute analysis of all projectile points and an attribute summary ordered by type are provided. Analysis of the age and cultural affinities of the varied projectile point forms indicates utilization of the site by aboriginal populations over an 8000-year period. Associations with at least nine distinctive complexes are recognized: Kirk, Halifax, Brewerton, Susquehanna, Meadowood, Hopewell, Owasco, Shenk's Ferry, and Susquehannock.

## ACKNOWLEDGMENTS

In the course of this study a number of individuals have contributed their time, energy and skills. I sincerely thank Andrew Kaczmarek and Anita Fahringer and Howard Hobbs for their assistance in codification of the projectile points and preliminary classification of the various tool types, respectively. Johanna Poncavage and Don Austin assisted in the classification by material and size of the debitage. Diane Sutter and Nancy Crede were of invaluable aid in the preparation of the codification tables for the point material. I am indebted to A. Lee Ambrose, Sybil Calabro, Markie Cleaveland, Tony Gaalaas and Martin Gursky for their work on the many fine line drawings which accompany this report. In this regard, Lynn Ellen Dixon, who with no previous experience rendered many of the finest of these, is deserving of special mention. Finally, I am grateful to State Archaeologist Barry C. Kent and to Dr. Joseph W. Michels for their many helpful comments and suggestions regarding classification and analysis.

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## INTRODUCTION

The lithic inventory of the Sheep Rock shelter is characterized by a large variety of specialized tool types, the most dominant of which are an assortment of distinctive projectile point and knife forms. Preliminary analysis of the collection indicates that the rock shelter probably was occupied with varying intensity at least since the Middle and possibly Early Archaic period some 7000-9000 years ago. During much of this interval successive occupations generally have left a meager record of their existence as measured by the composite representation of the 18 lithomorphic classes listed in Table 1. Within and between these classes 107 typological varieties of modified stone artifacts are reocgnized. Nearly two-thirds of these belong to the projectile point and knife classes and another one-fourth to six other chipped stone categories. The few remaining types are scattered throughout a heterogeneous group of eight lithic classes.

The principal objective of this report is to provide a preliminary descriptive summary of the obviously utilized, shaped, and non-utilitarian lithic materials recovered from the site. Emphasis is placed on the description and classification of projectile points, since these forms are particularly diagnostic of distinctive cultural phases and have accordingly received the greatest amount of attention in the literature. Other tool classes probably are equally diagnostic, but time limitations have prevented as detailed an analysis as that for the points.

## METHODOLOGY

The classification of artifactual material demands as a prerequisite the reduction of individual artifacts into descriptive units. By studying the differential combination of these the extent of artifact similarity can be expressed quantitatively as well as qualitatively. Of the several kinds of attribute systems that may be constructed, those dealing with function and morphology are the most often used. In some instances it is possible to ascertain the function of prehistoric artifacts where such classes as scrapers, drills, projectile points and knives are recognized. Since they are taken from prehistoric contexts, these artifacts must be compared with tools used by aboriginal populations, and similarites in form are usually equated with similarities in function. The problems created by this approach are obvious, since a particular tool form may serve more than one purpose in the same cultural milieu, in addition to performing distinct functions in different cultural settings. The problem of recognizing function is a complex one and shall not be dealt within this report. Instead, the current terminology is applied without consideration of its justification.

A second method of classifying artifacts is to define purely descriptive attribute classes which reflect morphology, size, weight, or a combination of these dimensions. Inferences concerning functions are not made; artifacts are simply assigned to classes on the basis of similarities in physical attributes judged to have cultural significance. In this preliminary report both methods of analysis are applied, with priority being given to the second.

In the analysis of lithic artifacts from the Sheep Rock shelter the author has been guided by the work of Rouse (1939, 1960), Whiteford (1947), Kowta (1961), Ritchie (1961), and Binford (1963). The projectile point study, which forms the core of this preliminary report, relies heavily upon Binford (1963), while analysis of the remaining materials is structured by a combination of these authors. The methodology used for the isolation of artifact types involved:

1. A preliminary visual sorting into general artifact classes (chipped stone, ground stone, and other);

2. Division of these general classes by visual inspection into specialized tool forms (projectile points, knives, ground stones, hammer stones, mica, etc.) on the basis of formal morphological variation with respect to such gross aspects as size, shape, proportions and surface treatment;

3. Type distinctions within the specialized tool forms on the basis of unique attribute clusters concerned with various elements and subelements of the artifacts;

4. Stratigraphic analysis of types to resolve ambiguities encountered in 3.

All types are given a number or letter designation. Type names, when representative examples are recognized in the Sheep Rock collection, are also used.

Projectile points, as well as some knife forms, receive the most detailed treatment, since they are stylistically highly indicative of cultural affinities, and, however one-sided, the greatest attention is given to them in the literature. An attribute analysis of these forms is favored for two reasons: (1) taxa may be explicitly defined and (2) factors consisting of cohesive clusterings of associated attributes may be studied independently of taxa, and, given sufficient sample size, these may be crystalized into descriptive types through statistical techniques, thus insuring maximum objectivity. Regrettably, this latter approach to typology cannot be exploited, since at present the point collection is statistically inadequate. It does, however, permit some low level factor analyses.

The attribute list provided in Appendix A is a modification of Binford's A Proposed Attribute List for the Description and Classification of Projectile Points (1963). In most cases, only numbered names are given, and definitions of these are as given by Binford. In some instances new terms and their definitions have been added. Not all of the attributes in Binford's list have been used, and where modifications occur it is for the purpose of simplicity. Coding for the entire list would demand an enormous amount of time and energy, as J. D. Jennings (1963) has experienced with a somewhat more detailed attribute inventory.

The resulting attribute list represents a reduction to a manageable number of attribute classes sufficient to differentiate clearly all point types inherent in the collection. Its primary function, however, is to describe, compare, and contrast morphological variation. Emphasis, therefore, has been placed on "splitting" rather than "lumping" in the differentiation of types. A coded summary of the attributes characterizing each projectile point, together with an explanation of the code structure and coding procedures, is presented in Appendix B. Appendix C provides a technical summary of the ranges of attributes characterizing each point type.

Other tool categories have received less detailed attention. As a consequence, both the criteria and manner of description vary in the literature. In this report descriptions of these categories, as with projectile points, lean heavily on details of shape and proportions, weight, materials used in manufacture and, to a lesser extent, on function. Many knife types, for example, may be appropriately described using the attribute list provided for the description of projectile points. In the absence of such a system, however, which is the situation for most tool categories, only the most obvious and general attribute classes that distinguish one type from another within any particular category are utilized, and no comprehensive attribute system is illucidated.

Table 1

DISTRIBUTION OF LITHIC CLASSES BY NUMBERS OF ARTIFACTS AND ARTIFACT TYPES

| Lithic Classes | Number of Artifacts | Number of Types |
|---|---|---|
| Projectile Points | 155 | 41 |
| Knives | 54 | 22 |
| Scrapers | 26 | 5 |
| Drills | 14 | 6 |
| Cores and Core Residues | 35 | 8 |
| Celts, Axes, Adzes, Choppers, Pounders | 14 | 11 |
| Net Sinkers | 16 | 5 |
| Ground Stones | 5 | 1 |
| Abraded Stones | 6 | 1 |
| Hammer Stones | 7 | 1 |
| Fire Stones | 56 | 1 |
| Mica | 3 | 1 |
| Quartz Crystals | 5 | 1 |
| Red Ocher | 1 | 1 |
| Gorgets | 1 | 1 |
| | 398 | 106 |
| Detritus | 2907 | 1 |

## PROJECTILE POINTS

A total of 155 bifacially shaped artifacts, either fragmentary or complete, are functionally identified as projectile points. As used in this report, the term "projectile point" refers to those hafted objects which are employed primarily for piercing purposes by means of thrusting, throwing, or launching, and include such specialized tool classes as arrow, dart, and spear points. No single function is assumed for any of the various point types described, since it is recognized that the same object may have been used interchangeably as a cutting or piercing instrument such as a knife, punch, or drill. However, an attempt has been made to include in the analysis of this section only those objects which are considered to be projectile points as defined above.

As a group, the points vary considerably in size, shape, and color, as well as in quality of manufacture and materials used. Complete specimens range between 10 and 78 mm in length, 13 and 41 mm in width, 3 and 12 mm in thickness, and 0.9 and 27.7 gm in weight. Workmanship varies from well-shaped, delicately pressure-flaked specimens to those which are crudely shaped and roughly percussion-flaked. Manufacturing materials range from siltstone through rhyolite and limestone to jaspers, flints, cherts, and chalcedonys of varying hues of monotoned and mottled red, brown, yellow, gray, black and white.

The collection of identifiable projectile points has been classified into 41 types representing two basic traditions: (1) triangular and (2) notched-stemmed points. Only those point fragments for which the shape could be reconstructed are included among the types.

### STEMMED AND NOTCHED POINTS

<u>Type 1</u> (Fig. 1a,b)

General Description: This corner-notched type is moderately long and thick and relatively broad. Length to width ratio averages 3/2:1, with the point of maximum thickness occurring midway between the two haft elements. In longitudinal cross-section they tend to be biterminally-asymmetrical biconvex and in transverse section asymmetrically biconvex. Blades are distinctively asymmetrical-excurvate, serrated, and beveled, suggesting possible use as cutting implements. Hafting elements are also asymmetrical, with the shoulders forming rounded acute and obtuse angles with the blade as well as with the lower subelement of the haft area. Distal points of juncture are generally rounded, while the proximal points of juncture are angular. Notches are relatively deep (4-5 mm). The broad stem expands rapidly away from the longitudinal axis towards the terminal points of the base, which is subconvex to convex in outline, lightly ground smooth, and almost as wide as the blade. Both specimens possess a slight hump due to hinge-flaking in the haft area, and both are made of gray to brownish-black grainy flint.

Stratigraphic Distribution: Type 1 is restricted to and is the only point type to be found in level 9. It marks the first appearance of any point form in the stratigraphic sequence.

Age and Cultural Affinity: Marked similarity to the Krik Corner-Notched point suggests an Early Archaic data of about 6000 B.C. and an affinity with the Kirk complex of the North Carolina Piedmont sequence (Coe 1964).

Reference: Coe 1964, p. 71, Fig. 60, Group A, 1st at left, and Group B, 1st at left.

<u>Type 2</u> (Fig. 2a)

General Description: Points of Type 2 are of moderate length, width, and thickness. Reconstruction of the overall form from the two basal fragments of this type indicates a length-to-width ratio of a little over 2:1, with maximum thickness occurring between the shoulders. In longitudinal cross-section the specimens tend to be biterminally-asymmetrical biconvex and in transverse section asymmetrically biconvex. Blades are symmetrically ovate, skillfully percussion-flaked, and irregular in edge treatment. Hafting elements are also symmetrical, with the shoulders forming rounded obtuse angles with both the blade and the lower subelement of the haft area. All points of juncture tend to be rounded, particularly the distal points. Distinctive of this type is the moderately long rectangular straight stem, the base of which varies in outline from subconvex to almost notch-like subconcave. All edges of the stem and base are unsmoothed and slightly irregular in form. Both specimens are made of red jasper.

Stratigraphic Distribution: Type 2 is found only in level 8 along with representatives of Types 3, 4, 5 and 6.

Age and Cultural Affinity: These specimens bear a faint resemblance to the Bare Island point Type A described by Kinsey (1959:115), who suggests that the antecedent of this type may lie in Coe's Savannah River Focus of the Virginia and Carolina Piedmont (Ibid.:131; Coe 1952:305-306). This is inconsistent, however, with the type's stratigraphic relation of Sheep Rock to the Kirk Corner-Notched variant described above and the Halifax type to be described below. In New York the Bare Island type also appears to be part of a varied Late Archaic or Transitional complex, which Ritchie believes to be associated with steatite vessel-ware. At Sheep Rock, however, Type 2 lies well below the first appearance of steatite fragments, as well as diagnostic Late Archaic implements, from which it is separated by two levels, one of which is sterile. Thus, this type pre-dates the apparently Late Archaic Bare Island form, and, though not implied, a genetic relationship may exist. On the basis of the type's provenience at Sheep Rock it is assigned a Middle Archaic date of 4000-3000 B.C.

References: Fetzer 1959, p. 27, Fig. 4, bottom row, 1st at left; Kinsey 1959, p. 120, Plate 4, 14, 19; Lewis and Lewis 1961, p. 35, Plate 5, E, K; Ritchie 1961, p. 14, Type-specimen drawing, p. 64, Plate 3, 6, 10, 12.

Type 3 (Fig. 2b)

General Description: Specimens of this corner-notched type are of moderate size in length, width, and thickness, with an average length to width ratio of about 2:1. The area of greatest thickness is located just above a line connecting the shoulders. In longitudinal cross-section these points are both biterminally asymmetrical and asymmetrically biconvex, and in transverse section they are asymmetrically biconvex. Blades are evenly flaked and symmetrically ovate in outline with irregularly or evenly chipped lateral edges. Hafting elements also tend to be symmetrical, with the shoulders forming nearly right angles with the blade and acute angles with the lower subelement of the haft area. All points of juncture are rounded with small arcs joining the main elements. A distinctive feature of this type is the horizontal shoulders which parallel a broad, straight base. Its corner notches are moderately deep (4 mm) and neatly formed. Only one of the specimens gives evidence of basal grinding. Compared to their total length stems of this type are relatively short and broad, measuring about two-thirds the maximum width of each specimen. One is made of grainy brown flint and the other of a more glassy, heavily patinated black flint.

Stratigraphic Distribution: Type 3 is found in both levels 8 and 7.

Age and Cultural Affinity: This type resembles in many ways some corner-notched points of the Laurentian tradition of New York State. The example referenced below under Willey

(1966) is the best "look-a-like" for this type, especially with respect to articulation of the base and haft elements. In the example cited under Ritchie (1961) the angle formed by the intersection of an extension of the basal line and the lower subelement of the haft area is greater than in either of the Sheep Rock specimens. In New York such points form part of the Late Archaic Brewerton complex, while at Sheep Rock they appear to be contemporaneous with the Halifax type discussed below, and are separated from Late Archaic materials by level 6, which is sterile. It is suggested, therefore, that a late Middle Archaic date be assigned to them.

References: Clark, et al., 1960, p. 44, Fig. 3, top row, 3rd from right; Ritchie 1961, Plate 5; Willey 1966, p. 263, Fig. 5-15, bb.

Type 4 (Fig. 2c)

General Description: This side-notched type is relatively small in length and width and is moderately thick. Its length-to-width ratio is approximately 7/4:1, with the area of maximum thickness occurring between the shoulders. The longitudinal cross-section varies somewhat from biterminally-asymmetrical biconvex to asymmetrically biconvex; the transverse section is asymmetrically biconvex. Blades are moderately well-percussion-flaked, symmetrical, and vary from ovate to almost triangular in outline. Hafting elements are also symmetrical, with the shoulders forming angular obtuse angles with the blade and rounded right angles with the lower subelement of the haft area. Proximal points of juncture are rounded and continuous with the contour of the basal edge. Notches are relatively shallow (2-3 mm). The stem is short and flares out to form "feet" in conjunction with the subconcave basal edge, which is equal to or greater than the blade in width. Bases as well as hafting elements are ground in both specimens. Type 4 is made of good quality black flint.

Stratigraphic Distribution: Specimens of this type were excavated from both levels 8 and 7.

Age and Cultural Affinity: Though of different material, points of this type are in other respects identical to the side-notched specimens of the Halifax phase described by Coe for the Gaston site in the North Carolina Piedmont (1964:109, 123). The Halifax type is dated at 3484 B.C. The Big Sandy type found at the Eva site in Tennessee is also similar to Type 4 and is most strongly associated with the lower level of the Three Mile Component, which is estimated to date between 4000-3000 B.C. (Lewis and Lewis 1961:34, 37). The type therefore dates to the Middle Archaic.

References: Broyles 1964, p. 30, Fig. 16, L; Coe 1964, p. 109, Fig. 105, Group A, 1st at left; Lewis and Lewis 1964, p. 38, Plate 7, b.

Type 5 (Fig. 2d)

General Description: Specimens of this side-notched point type are relatively small and moderately thick. Length-to-width ratio averages about 3/2:1, with the area of maximum thickness occurring either between the haft elements or the shoulders. Both specimens are biterminally asymmetrical biconvex in longitudinal cross-section and biconvex in transerve section. Blades are distinctively triangulo-incurvate in outline, roughly percussion-flaked, and may or may not be slightly asymmetrical. Hafting elements are generally symmetrical, with the shoulders forming angular right or obtuse angles with the blade and rounded acute angles with the lower subelement of the haft area. Proximal points of juncture are rounded and continuous with the contour of the basal edge. Notches are relatively shallow (2-3 mm). The stem is relatively short and expands outward toward the base, which is straight or slightly subconcave, biterminally curvate, and slightly narrower than the blade. Both specimens are lightly ground on the base and are made of brown or black flint.

Stratigraphic Distribution: Type 5 was found in both levels 8 and 7.

Age and Cultural Affinity: A search of the literature failed to yield comparable examples of this type. Its stratigraphic association with the Halifax type discussed above suggests a Middle Archaic date. Types 5 and 8 share many features in common and, though separated by a sterile layer, may be genetically related.

Type 6 (Fig. 3a)

General Description: Type 6 is moderately long, wide and thick. Its length-to-width ratio is nearly 2:1, with the area of greatest thickness located midway between the base and the tip. The single representative of this type is biconvex in longitudinal cross-section and asymmetrically biconvex in transverse section. The blade is roughly percussion-flaked, asymmetrical and possesses irregular lateral edges. The most excurvate of these, however, is more even in form and under a magnifying glass appears to be slightly smoother than the other lateral edge, suggesting possible use as a cutting implement. Hafting elements are also asymmetrical, with the shoulders forming angular obtuse angles with the blade and rounded right or obtuse angles with the lower subelement of the haft area. All points of juncture are angular. Both side notches are relatively shallow (3 mm) and are ground. The stem is short, rather broad, and distinctively asymmetrical. Maximum width lies along the straight, evenly ground base, which characteristically projects on one side of the longitudinal axis beyond an imaginary line extending the lateral edge of the blade through the base. The single specimen of this type is made of light-colored, black-speckled rhyolite.

Stratigraphic Distribution: Type 6 was recovered from level 8.

Age and Cultural Affinity: Mayer-Oakes (1955:147) suggests an Archaic date for this type in the Upper Ohio Valley but does not specify which period. In view of its stratigraphic association at Sheep Rock with the Halifax type, a late Middle Archaic date is suggested.

References: Broyles 1964, p. 30, Fig. 16, O; Dragoo 1956, p. 85, Plate 6, 4th row, 1st ar right; Mayer-Oakes 1955, p. 147, Plate 88, 2nd row, 4th from right, 8th from left.

Type 7 (Fig. 3b)

General Description: This corner-notched type is small and relatively thin, with a length-to-width ratio of 1:1. Maximum thickness occurs midway between the base and the tip. In longitudinal cross-section the single specimen of this type is biconvex and in transverse section asymmetrically biconvex. The distinctive symmetrically ovate blade is delicately serrated by fine pressure-flaking superimposed on a skillfully percussion-flaked blank. Hafting elements are symmetrical but irregular in treatment, with the shoulders forming slightly obtuse angles with the blade and rounded obtuse angles with the lower subelement of the haft area. Notches are rather shallow and produce a broad, stub-like stem that expands only slightly away from the longitudinal axis, terminating in the type's diagnostic symmetrically bifurcated base. The small basal notch is produced by removal of a concoidal spall from each side of the base. The specimen is made of yellow jasper.

Stratigraphic Distribution: Type 7 was excavated from level 7.

Age and Cultural Affinity: Bifurcated base points have a very wide distribution not restricted to the Eastern United States (Fitting 1964:92-94). There are apparently two varieties, one large, with a relatively narrow and long serrated blade and often ground, moderately thick base, which seems to date to the Early Archaic of about 7000 B.C. in West Virginia, Tennessee and Alabama (Broyles 1964; Lewis and Lewis 1961; Cambron and Waters 1959) and which may be related to the Kirk Serrated projectile point (Coe 1964). Similar forms are also found, mostly on surface sites, in Michigan, New York, New Jersey and Pennsylvania (DeVisscher 1963; Ritchie 1961; Cross 1956; Witthoft 1959). The smaller type (Type 7 above) has a short triangular or ovate blade, which is often serrated, and a thin, shallowly bifurcated, unground base. Suggested chronometric provenience has ranged from late Middle Archaic to Early Woodland, with Fitting (1964:94) favoring a Late Archaic to Early Woodland date. At the Rohr rock shelter in

West Virginia (Dragoo 1959:179), however, this type has been radiocarbon dated at 3352±90 B.C. (Deevey, et al. 1959:161), which fits well with the type's stratigraphic relationship to the Halifax type at Sheep Rock dated at the Gaston site to 3484±350 B.C. (Coe 1964:108). The type is therefore taken to be a Middle Archaic manifestation.

References: Cross 1956, Vol. II, Plate 20b, 2nd row, 2nd from left; Lewis and Lewis 1961, p. 41, Plate 9, m, n; Ritchie 1961, p. 115, Plate 34, 2, 3.

Type 8 (Fig. 3c,d)

General Description: This relatively abundant corner and side-notched form is small to medium-sized in all dimensions, with an average length-to-width ratio of about 3/2:1. The area of maximum thickness is located between the shoulders. In longitudinal cross-section specimens of Type 8 are biterminally-asymmetrical biconvex and symmetrically biconvex; in transverse section they are symmetrically and asymmetrically biconvex. The ovate, excurvate, and triangular blades of this type are generally well-percussion-flaked, variable in edge treatment, and may be either symmetrical or asymmetrical relative to the longitudinal axis. Haft elements usually are symmetrical, with the shoulders most often forming angular or slightly rounded acute angles with the blade and lower subelement of the haft area. Rounded obtuse angles occur in a minority of cases. One of the eight specimens possesses small, sharp barbs. Distal points of juncture are mixed rounded and angular, while the proximal points are predominantly rounded and continuous with the basal outline. Notches are shallow (2 mm). The generally short stems expand rapidly away from the longitudinal axis and are broad but narrower than the blade. Bases are subconvex to straight in outline and are almost exclusively biterminally curvate. Most points of this type show some degree of basal smoothing. All are made of various grades of brown to black flint.

Stratigraphic Distribution: Type 8 has a rather wide stratigraphic range, with 4 specimens occurring in level 5, 2 in level 4, and 1 specimen in level 3. Two specimens lack provenience designations. Level 5 is believed to be the origin of all of these, and examples are found in levels 3 and 4 only where they are contiguous.

Age and Cultural Affinity: In basal form, but not in blade form, these points resemble greatly Type 5 discussed above and may possibly represent a continuation of that style. Type 8 is essentially identical to many specimens of the Brewerton corner and side-notched types defined by Ritchie (1961:16, 19-20), which are found primarily in central and western New York. As in that area, at Sheep Rock "the two forms overlap...and appear to be genetically related and generally contemporaneous" (Ibid.:16). This type has been radiocarbon dated at the O'Neil site in New York to 2050±220 B.C. and 2010±100 B.C., and at the Bannerman site in the Hudson Valley to 2524±300 B.C. It is a representative of the Laurentian tradition of the Late Archaic in the Northeast (Ritchie 1965:91) and is presumed by Ritchie (1961:19-20) to have derived from earlier and widely distributed side-notched forms such as the Otter Creek point (Ibid.:94, Plate 20, particularly 4 and 5) and the Big Sandy side-nothced point (Lewis and Lewis 1961:38, Plate 7, o and r in particular), as well as other similar forms of the Shell Mound complex of the Southeast.

References: Broyles 1964, p. 30, Fig. 16, J; Carpenter 1956, p. 113, Plate 21, 2nd row, 1st at left; Fetzer 1959, p. 24, Plate 4, center column, 4th and 5th from bottom of page; Greene 1961, p. 87, Plate 8, row L, 2nd, 3rd, 4th from left; Mayer-Oakes 1955, p. 135, Plate 73, B, p. 139, Plate 77, L, 1st and 2nd from left; Ritchie 1961, p. 19, Type Specimen, p. 67, Plate 4, 1 and 5, p. 72, Plate 7, 12.

Type 9 (Fig. 3e)

General Description: The single specimen of this side-notched type is relatively small in all dimensions. Length-to-width ratio is 3/2:1, and the area of greatest thickness is located between the haft elements. In longitudinal cross-section the type is biterminally-asymmetrical biconvex and in transverse section asymmetrically biconvex. The blade is triangular in outline, symmetrical, and delicately pressure-flaked, though slightly irregular in edge treatment. Hafting elements are also symmetrical, with the shoulders forming angular obtuse angles with the blade and continuously rounded right angles with the lower subelement of the haft area. Notches are rather shallow (2 mm) and evenly chipped but are not smoothed. The stem is short and very broad in relation to the blade, and expands outward from the longitudinal axis to meet the subconvex base in acute angular points of juncture. Equal in width to the blade, the base is evenly chipped and smoothed. The material from which the point was manufactured is a moderately glassy dark-brown flint.

Stratigraphic Distribution: Type 9 is found only in level 5.

Age and Cultural Affinity: This type is another variant of the Brewerton Side-Notched point described by Ritchie (1961: 19), and dates to the Late Archaic of about 2500-2000 B.C.

References: Broyles 1964, p. 30, Fig. 16, M; Ritchie 1961, p. 72, Plate 7, 4; Witthoft 1946, p. 127, Plate 1, 14.

Type 10 (Fig. 3f)

General Description: Type 10 is a side-notched point of small dimensions, with a length-to-width ratio of 7/4:1. The area of greatest thickness is situated between the shoulders. In longitudinal cross-section the single specimen of this type is biterminally-asymmetrical biconvex and in transverse section symmetrically biconvex. The asymmetrical blade is ovate in outline, roughly pressure-flaked, and irregular in edge treatment. Hafting elements are also asymmetrical, forming angular obtuse angles with the blade and continuously rounded obtuse angles with the lower subelement of the haft area. Notches are shallow, of variable depth (1-2 mm), and are smoothed. The stem is rather short and broad, expanding out and then downward from the longitudinal axis to meet at nearly right angles with the ground, subconcave base in angular points of juncture. The base is almost as wide as the blade. The point is made of dark-gray, moderately glassy flint.

Stratigraphic Distribution: Type 10 was excavated from level 5.

Age and Cultural Affinity: This specimen is related to Types 8 and 9 discussed above and constitutes another variant of the Brewerton Side-Notched complex which dates to the Late Archaic in the Northeast (ca. 2500-2000 B.C.). The asymmetrical configuration of the blade suggests possible use as a knife, though the lateral edges do not show signs of wear.

References: Ritchie 1961, p. 72, Plate 7, 5; Ritchie 1965, p. 92, Plate 29, 11.

Type 11 (Fig. 4a)

General Description: The single specimen of this corner-notched type is large in all dimensions, including thickness, and well-proportioned, with a length-to-width ratio of about 2:1. The area of greatest thickness occurs midway between the shoulders. In longitudinal cross-section the point is biterminally-asymmetrical biconvex, and in transverse section it is asymmetrically biconvex. The blade is ovate in outline, symmetrical, and skillfully percussion-flaked, though with somewhat irregular lateral edges. Hafting elements are also symmetrical, with the shoulders forming angular obtuse angles with the blade and rounded right angles with the lower subelement of the haft area. Notches are deep (6 mm) and ground. The stem is moderately long in proportion to the blade and flares outward from the longitudinal axis to join with the straight trivectoral base, which is lightly ground and measures about 3/4 the width of the blade. Proximal points of juncture are angular. Type 11 is made from a fine-grained, dark-brown flint.

Stratigraphic Distribution: This type is found only in level 5.

Age and Cultural Affinity: Type 11 is a variant of the Brewerton Spearpoint complex which dates to the Late Archaic of the Northeast (ca. 2500-2000 B.C.).

Reference: Ritchie 1961, p. 67, Plate 4, 5 and 12.

Type 12 (Fig. 4b)

General Description: This rudely percussion-flaked side-notched specimen is of moderate length, width and thickness, with a length-to-width ratio of 5/3:1. Maximum thickness occurs in the area just above the shoulders. In longitudinal cross-section the point is virtually plano-convex, while in transverse section it is asymmetrically biconvex. The blade is asymmetrically ovate in outline, crudely percussion-flaked and irregular in edge treatment. Hafting elements are approximately symmetrical, with the shoulders forming angular obtuse angles with the blade and continuously rounded obtuse angles with the lower subelement of the haft area. The broad notches are of moderate depth (3-4 mm) and are ground smooth. The stem is relatively long (17 mm) in proportion to the blade and flares outward from the longitudinal axis toward the base, which is subconvex and smoothed, and measures 7/8 the width of the blade. Proximal points of juncture are both rounded and angular. The point is made of mottled red and yellow jasper.

Stratigraphic Distribution: The single specimen of this type was removed from an occupation zone at the interface between levels 3 and 5.

Age and Cultural Affinity: This is yet another form belonging to the varied Late Archaic Brewerton side and corner-notched complex of the Northeast, which is dated at 2500-2000 B.C. (Ritchie 1965:91).

References: Alam 1961, p. 74, Plate 7, 2nd row, 5th from right; Dragoo 1956, p. 85, Plate 6, 4th row, 2nd from right; Mayer-Oakes 1955, p. 140, Plate 78, A, 3rd from left, p. 147, Plate 88, 2nd row, 4th from left; Ritchie 1965, p. 92, Plate 29, 15 and 16.

Type 13 (Fig. 4c)

General Description: Points of this side-notched type are of moderate length and thickness and are relatively narrow, with a length-to-width ratio of about 7/4:1. Maximum thickness occurs just above the shoulders. In longitudinal cross-section the type is predominantly biterminally-asymmetrical biconvex and symmetrically biconvex. In transverse section it is symmetrically and asymmetrically biconvex. Blades are ovate or triangular in outline, skillfully percussion-flaked in some specimens and delicately pressure-flaked in others. All are irregular in edge treatment, and most are serrated. Hafting elements are symmetrical, with the shoulders forming angular oblique angles with the blade and rounded right angles with the lower subelement of the haft area. The shallow notches vary somewhat in breadth and are usually unsmoothed. Stems are relatively short and broad, generally expanding sharply away from the longitudinal axis for a short distance to join with the unsmoothed, straight to slightly subconcave base in both angular and rounded points of juncture. The base is equal to or greater in width than the blade and is often irregular in edge treatment. These points are made of purplish rhyolite and various grades of light brown, mottled gray and black flints.

Stratigraphic Distribution: Five specimens of this type are from level 5, one specimen is from level 3 (where 3 is contiguous with 5), and one is from level 1. Mixing, rather than a persistence of style, probably accounts for the latter two proveniences.

Age and Cultural Affinity: This type bears a striking resemblance to many specimens of the Normanskill type described by Ritchie (1961:37-38). He suggests that they constitute an element of the Vosburg complex of the Laurentian tradition dating to the Middle Archaic and are fairly-well confined to Eastern New York. However, later (1965:126) he states that the River Phase, of which this type is diagnostic, was radiocarbon dated at the Bent site to 1930±100 years B.C., which is terminal Late Archaic. This latter chronometric provenience fits well with the stratigraphic position of Type 13 at Sheep Rock. In the Susquehanna Valley it is known as the "Helgramite" point and is named after an insect of similar form.

References: Alam 1961, p. 74, Plate 7, 2nd row, 2nd and 3rd from left; Stackhouse and Corl 1962, p. 10, Plate 4, 21; Mayer-Oakes 1955, p. 147, Plate 88, 2nd row, 3rd from left; Ritchie 1965, p. 129, Plate 46, 13, 16, 23.

Type 14 (Fig. 4d)

General Description: Type 14 is a relatively small side-notched point form which is distinctively thick. Its length-to-width ratio is 3/2:1, with the point of maximum thickness occurring above the shoulder line. Longitudinal cross-section is biconvex or asymmetrically biconvex, while in transverse section specimens of this type are asymmetrically biconvex. The blade is ovate in outline, symmetrical, fairly-well percussion-flaked, and only slightly irregular in edge treatment. Hafting elements are symmetrical, with the shoulders forming angular or rounded obtuse angles with the blade and rounded right or obtuse angles with the lower subelement of the haft area. Notches are both shallow and deep, smoothed and unsmoothed and rather broad. The stem is relatively broad and expands outward from the longitudinal axis, articulating with the concave basal contour in rounded points of juncture. The "ear-like" configuration of the base and stem is distinctive of this type. The base, which is almost as wide as the blade, may or may not be ground and is irregular in edge treatment. Both specimens are made of fine-grained brown or black flint.

Stratigraphic Distribution: Type 14 is restricted to level 5.

Age and Cultural Affinity: These specimens may be a variant of the Brewerton Eared-Notched type described by Ritchie (1961:17). They are generally similar to this type in blade and base form, as well as in thickness and proportions, but tend to be more deeply notched. The type dates to the Late Archaic (ca. 2500-2000 B.C.). Furthermore, the "ears" of the New York specimens extend beyond an imaginary line continuing the lateral edge of the blade through the base, whereas in neither example of Type 14 is this the case.

Reference: Ritchie 1965, p. 108, Plate 34, 23; Ritchie 1961, p. 69, Plate 5, 8. Neither of these examples has quite the depth of basal convexity of the Sheep Rock specimens.

Type 15 (Fig. 4e)

General Description: This side-notched, truncated-lanceolate type is long, relatively narrow, and moderately thick. Length-to-width ratio is about 3:1, with the area of maximum thickness occurring above the shoulders. In longitudinal cross-section specimens of this type are asymmetrically biconvex and in transverse section both symmetrically and asymmetrically biconvex. Blades are ovate in outline, variable in quality of percussion flaking and generally irregular in edge treatment. Hafting elements are symmetrical, with the very narrow shoulders forming angular obtuse angles with the blade and broadly rounded obtuse angles with the lower subelement of the haft area. Notches are distinctively shallow and wide and may or may not be ground. Stems are broad, moderately long and expand only slightly away from the longitudinal axis, flanging outward slightly just before joining with a straight, ground or unground base in angular points of juncture. The base is equal in width to the blade and is irregular in edge treatment. All three specimens are made of dark gray or brown, grainy flint.

Stratigraphic Distribution: Two specimens of this type occur in level 5, one example lacks stratigraphic provenience.

Age and Cultural Affinity: Type 15 bears a strong resemblance to the Steubenville Stemmed and Lanceolate forms defined by Ritchie (1961:50-51). It varies, however, in lacking the characteristic broad proportions and subconcave base, being rather elongate and slender in configuration and sharply truncated. Its stratigraphic provenience suggests a Late Archaic date, which occurs with Dragoo's interpretation of the cultural-temporal associations for Steubenville forms excavated in the upper Ohio Valley (Dragoo 1959:201-206, 210, 213). Though Type 15 is strikingly similar in outline to specimens of the Paleo-Indian Scottsbluff point type (see for example Wheat 1966:46), a genetic relationship such as suggested by Mayer-Oakes (1955a: 20) does not seem warranted, as the two types differ in important morphological particulars (chipping pattern and technique and configuration of the stem and blade), as well as in material and chronological context.

References: A survey of the literature failed to reveal any comparable examples.

<u>Type 16</u> (Fig. 5a)

General Description: The two distinctive specimens of Type 16 vary substantially in size and thickness from small to medium-large and moderately-thin to relatively thick. Length-to-width ratio ranges from 7/4:1 to 9/4:1, with the area of greatest thickness being located just above the shoulder line. In longitudinal cross-section the type is either biterminally-asymmetrical biconvex or symmetrically biconvex, and in transverse section symmetrically and asymmetrically biconvex. Blades are ovate in outline and fairly-well percussion-flaked, though edge treatment is irregular. Hafting elements are symmetrical, with the steeply sloping shoulders forming angular obtuse angles with the blade and very broad continuously rounded obtuse angles with the lower subelement of the haft area. Both lateral edges of these elements are ground. Stems are long and curve inward from the distal points of juncture while descending steeply toward the base with which it joins in slightly rounded obtuse angles. Bases are straight, evenly chipped, and measure about one-half the width of the blade. The smaller of the two specimens was prepared from light gray limestone and the larger one from grainy, mottled dark-brown flint.

Stratigraphic Distribution: Both examples are from level 5.

Age and Cultural Affinity: Type 16 falls within the range of variability of the Jack's Reef Pentagonal points described by Ritchie (1961:28). Two clusters dominate this range: (1) a comparatively small version with parallel-sided stems, which appears to date to an evolved Point Peninsula complex of the Middle-Late Woodland interface; and (2) a larger, less skillfully prepared, contracting stem variety, which appears in the

Brewerton complex and to which Ritchie (Ibid.) assigns a Middle Archaic date. In view of the type's stratigraphic provenience, however, a Late Archaic date is more likely at the Sheep Rock shelter.

References: Cross 1956, Plate 50b, 7 (similar to smaller specimen); Ritchie 1961, p. 80, Plate 12, 7 (similar to larger specimen).

Type 17 (Fig. 5b)

General Description: Specimens of this type are quite variable in length and width, but tend to be large and thick. Length-to-width ratio is approximately 7/4:1, and the area of greatest thickness ranges from slightly below the shoulder line to far up on the blade. Longitudinal cross-section is variable, ranging from biterminally-asymmetrical biconvex to symmetrically and asymmetrically biconvex. The latter two designations also apply to the transverse section. Blades are symmetrically ovate or triangular in outline, roughly percussion-flaked and irregular in edge treatment. Due to hinge flaking, one specimen possesses a distinct hump just above the shoulder line. The smoothed hafting elements are both symmetrical and asymmetrical, with the shoulders forming angular obtuse angles with the blade and very broadly rounded descending obtuse angles with the lower subelement of the haft area. The stem is long, incurvate, and continuously contracting, joining with a variably formed straight to subconvex bases in angular points of juncture. Base measure about 1/3 the width of the blade and are irregular in edge treatment. All examples are made of fine-grained, mottled brown or dark-brown flint.

Stratigraphic Distribution: Two specimens were excavated from level 5 and one specimen from level 3. Levels 3 and 5 are contiguous where the latter example was recovered, and its close proximity to level 5 suggests upward movement possibly as a result of rodent activity or some other natural agent.

Age and Cultural Affinity: Type 17 shows a striking resemblance to the Rossville point type of New Yrok which dates to the terminal Late Archaic or Transitional period (Ritchie 1961:46, 103). In many respects it is also similar to the earlier Morrow II point, defined by Coe for the North Carolina Piedmont (Coe 1964:37, 39, 43). In view of the type's stratigraphic provenience at Sheep Rock and its greater morphological similarity to the Rossville points, a Late Archaic-Transitional date is suggested.

References: Byers 1959, p. 245, Fig. 3, 13; Coe 1964, p. 39, Fig. 34, B, 2nd from left; Cross 1956, Plate 9a, 15, Plate 16b, 7, 10, Plate 36, 3; Gleason 1958, p. 85, Plate 7, 4th row, 1st at left; Ritchie 1961, p. 103, Plate 26, 3, 8.

Type 18 (Fig. 5c)

General Description: Type 18 is of moderate length, width and thickness. Length-to-width ratio is about 4:1, with the point of maximum thickness located just above the shoulder line. Specimens of this type are basically truncated-lanceolate in configuration. In longitudinal section they are biconvex and in transverse section symmetrically and asymmetrically biconvex. The blade is ovate in outline, moderately well percussion-flaked, and generally irregular in edge treatment. Hafting elements are symmetrical, with the shoulders usually forming angular obtuse angles with the blade and broadly rounded descending obtuse angles with the lower subelement of the haft area. The notches are broad and shallow (2 mm) and are not ground. Stems are of moderate length, curving first inward from the shoulders, then down and slightly outward, thus producing an essentially vertical extension of the blade. Proximal points of juncture tend to be sharply rounded. The base is subconcave, biterminally-curvate and averages 7/8 the width of the blade. One specimen is made of a purplish rhyolite native to eastern Pennsylvania, and the other of a fine-grained, moderately glassy, dark-brown flint.

Stratigraphic Distribution: Specimens of Type 18 derive from levels 5 and 3. For reasons which will be discussed later in this chapter, it is believed that the type is a function of level 5 and the location of the level 3 example is a product of mixing between the two levels where they are contiguous.

Age and Cultural Affinity: In form and description this type conforms well with the Bare Island point Type A discussed by Kinsey (1959:115). It has been presumed to be a Late Archaic manifestation in the Northeast. Ritchie (1961:15) suggests that in New York it is contemporaneous with steatite bowls. At Sheep Rock the type probably precedes the appearance of this Transitional element.

References: Kinsey 1959, p. 120, Plate 4, 1, 6, 9, 16; Ritchie 1961, p. 63, Plate 2, 6, 7.

Type 19 (Fig. 5d)

General Description: Type 19 is an exceptionally long and relatively narrow point of moderate thickness. Length-to-width ratio is about 4:1, with the area of maximum thickness located at or above the shoulder line. In longitudinal cross-section, the type tends to be biconvex and in transverse section asymmetrically biconvex. The blade is elongated-ovate in outline, symmetrical, roughly percussion-flaked, and irregular in edge treatment. Though both specimens are fragmentary, beveling of the blade appears to be characteristic of at least one of them. Hafting elements are also symmetrical, with the shoulders forming right or obtuse angles with the blade and rounded right or acute angles with the lower subelement of the haft area. Notches are of moderate depth (3-4 mm) and are not ground. In outline stems are expanding, short relative to the enormous length of the blade, and join with slightly concave bases in angular points of juncture. One specimen possesses a distinct hump due to hinge flaking between the haft elements. The base averages 3/4 the width of the blade and is unground and irregular in edge treatment. Both specimens were prepared from grainy black flint. One example is encrusted with a yellowish-white, acid-resistant material.

Stratigraphic Distribution: Type 19 points were found in both levels 5 and 4, and are believed to be a function of the former.

Age and Cultural Affinity: This type is similar to the Benton type described by Lewis and Lewis (1961:34), which is associated with the Big Sandy component of the Eva site in Tennessee, apparently dating from terminal Late Archaic to Early Woodland times (Lewis and Kneberg 1959:166, 181). These specimens differ from Type 19 in possessing a beveled base and notching and skillful pressure-flaking of the blade. An almost identical specimen dating from the early Boreal Archaic (not later than 2000 B.C.) comes from the second occupation of the Ellsworth Falls site in Maine (Byers 1959:246). While bearing a greater morphological resemblance to this point, the Sheep Rock shelter specimens seem to date no earlier (and probably no later) than the terminal Late Archaic. Thus they are situated chronometrically as well as geographically between the northern and southern variants.

References: Byers 1959, p. 246, Fig. 4, _1_; Lewis and Lewis 1961, p. 36, Plate 6, _b_ (_e_ and _h_ are somewhat larger); Willey 1966, p. 260, Fig. 5-13, _h_ (from Byers 1959).

## Type 20 (Fig. 5e)

General Description: The single specimen of Type 20 is moderately long, very broad, and relatively thick. Its length-to-width ratio is 4/3:1, with the area of maximum thickness located above the shoulder line and midway between the tip and the base. In longitudinal and transverse cross-section, the point is biconvex. The symmetrical blade is contracting-ovate in outline, roughly percussion-flaked, and irregular in edge treatment. Hafting elements are also symmetrical, with the shoulders forming broadly rounded right angles with the blade and rounded right and obtuse angles with the lower subelement of the haft area. Notches are deep (6 mm) and evenly ground. The stem is wide (3/4 the blade width) and relatively long compared to the length of the blade, expanding outward from the longitudinal axis to meet the subconcave base in sharply rounded points of juncture. The base is also ground and is biterminally-curvate. The point is made of corase-grained, heavily patinated black flint.

Stratigraphic Distribution: Type 20 was excavated from level 5.

Age and Cultural Affinity: This point is one of a variety of styles constituting the Susquehanna Broad Spear points which are found principally in the Susquehanna and Delaware drainage systems. They are defined by their association with soapstone vessels as elements of the Transitional Period. According to Witthoft (1965:32), cultures of this period date from about 1500-1000 B.C., with dispersal of the various point forms representing the expansion "of a rhyolite industry from the south...near the mouth of the [Susquehanna] river" (Witthoft 1953:22).

Reference: The only fairly accurate "look-a-like" for this specimen is Witthoft 1953, p. 29, Plate 1, 25. Its blade is more excurvate and its stem shorter; the proportions are otherwise similar.

Type 21 (Fig. 6a,b)

General Description: Type 21 is a small to medium sized point in all dimensions, with a length-to-width ratio of 2:1. Maximum thickness occurs in the area between the shoulders. In longitudinal and transverse cross-section specimens of this type tend to be symmetrically or asymmetrically biconvex. Blades are both symmetrical and asymmetrical and tend to be ovate in outline, boldly percussion-flaked, and variable in edge treatment. One specimen (Fig. 6b) has been re-chipped to produce a highly asymmetrical blade, probably for use as a knife. Hafting elements are also symmetrical and asymmetrical, with the shoulders generally forming angular obtuse angles with the blade and variably rounded obtuse angles with the lower subelement of the haft area. Notches are usually shallow (1-3 mm) and may or may not be smoothed. Stems are relatively short, occasionally broad, and expand away from the longitudinal axis to join with the base in angular or rounded points of juncture. The base is either straight or subconcave, sometimes biterminally-curvate and in most cases smoothed. All specimens are made of a purplish (sometimes brownish) rhyolite which is native to eastern Pennsylvania.

Stratigraphic Distribution: Type 21 has a rather wide distribution, with one example in level 5, two examples in level 4 and two in level 3, and one specimen in level 2. An analysis of levels 5, 4, 3, later in this chapter will demonstrate the probability of these points being a function of the lower part of level 3.

Age and Cultural Affinity: The six specimens of this type comprise a relatively narrow-bladed variety of the Susquehanna Broad Spear, which dates to the Transitional Period of 1500-1000 B.C.

References: Carpenter 1956, p. 115, Plate 23, C; Coe 1964, p. 44, Fig. 38, E; Leslie 1946, p. 65, Fig. 1, 8; Mayer-Oakes 1955, p. 61, Plate 15, A, row 1, 1st, 2nd, 3rd from right, row 2, 1st at left; Ritchie 1961, p. 11, Plate 31, 2, 9, 11; Ritchie 1965, p. 157, Plate 51, 11, 14.

Type 22 (Fig. 6c,d)

General Description: Specimens of this stemmed and corner-notched type are all of moderate size and variable thickness. Length-to-width ratio is about 2:1, with maximum thickness occurring midway between the tip and the base. In longitudinal cross-section all specimens tend to be asymmetrically biconvex, while in transverse section they are evenly divided between triangulo-convex and asymmetrically biconvex configurations. The blade is ovate in outline, boldly percussion-flaked, irregular in edge treatment, asymmetrical in reworked specimens and symmetrical in those which have not been reworked. The symmetrical blades of these latter forms are combined with weakly developed median ridges. Bulbous humps on the blades of reworked specimens seem to be a product of hinge fracturing during the reshaping process. Hafting elements tend to be symmetrical, with the shoulders forming both angular and rounded obtuse angles with the blade and rounded obtuse and right angles with the lower subelement of the haft area. Notches are generally shallow and irregular in edge treatment. Stems are relatively long and tend to be either rectangular or excurvately expanding (reworked specimens), joining with a straight or slightly subconvex base, which is ground in both of the reshaped examples, in angular points of juncture. The base-to-blade width ratio also differs for the two variants of this type, measuring about 2/3:1 in the straight-stemmed, broad-bladed forms, and 9/10:1 in the corner-notched reworked specimens. Both variants are made of quality flints of various mottled hues.

Stratigraphic Distribution: One specimen of the expanded-stem variant was excavated from the interface between levels 3 and 5, and a straight-stemmed point was found in level 3. Both were excavated from the same pit. The remaining two specimens were recovered during a general clean-up of the site and lack stratigraphic provenience.

Age and Cultural Affinity: In virtually every feature these points are identical to the Lamoka type described by Ritchie (1961:29), which has been radiocarbon dated at the Lamoka Lake site to about 2500 B.C. (Ritchie 1965:45). According to Ritchie (1961:29) the type persisted "in very minor proportions" up to Middle Woodland times. The type's provenience at Sheep Rock suggests a post-Late Archaic to Early Woodland date (but not later), thus following in time an extensive Lamoka occupation at the type-site. Ritchie credits L. R. Binford with distinguishing two variants of the Lamoka type which the latter suggests may be of chronological significance. In New York these variants occur together in the same Lamoka components and in the same levels (Ibid.:30). At Sheep Rock a similar situation prevails, but the straight-stemmed variant (Fig. 6c) was taken from a soil zone of slightly different composition overlying that containing the side-notched form (Fig. 6d). Considering the known displacement of other types and the less than adequate sample size, however, this separation may be fortuitous. Nevertheless, in keeping with Ritchie's suggestion for a sub-type distinction the stratigraphically lower variant is provisionally designated Lamoka A (side-notched) and the one above it Lamoka B (stemmed) (Ibid.).

References: Ritchie 1961, p. 83, Plate 13, 27; p. 85, Plate 14, 10, 19, 25; Ritchie 1965, p. 51, Plate 14, 12, 24, 29.

Type 23 (Fig. 6e,f)

General Description: This corner-notched type is of moderate length, width, and thickness. Length-to-width ratio is about 2:1, with the point of greatest thickness situated between the shoulders. Most specimens are biterminally-asymmetrical in longitudinal cross-section and asymmetrically biconvex in transverse section. Blades are symmetrically ovate, roughly percussion-flaked, and irregular in edge treatment. Hafting elements are also symmetrical, with the shoulders usually forming very sharply rounded acute or right angles with the blade and rounded acute or right angles with the lower subelement of the haft area. Notches are relatively shallow (3 mm) and are unground. The stem is quite broad and short and expands outward slightly from the longitudinal axis to join with a straight or subconvex, unground base in rounded points of juncture. Bases are generally biterminally-curvate, irregular in edge treatment, and measure about 3/4 the width of the blade. Material varies from a fine-grained black and mottled brown flint to a glassy maroon jasper.

Stratigraphic Distribution: Two specimens of Type 23 were excavated from level 4. The third example lacks a provenience designation.

Age and Cultural Affinity: Type 23 is another variant of the Brewerton corner-notched complex which dates to the Late Archaic (ca. 2500-2000 B.C.) of the Northeast.

Reference: Ritchie 1961, p. 67, Plate 4, 5.

Type 24 (Fig. 7a)

General Description: This straight-stemmed type is long, relatively slender and moderately thick. Its length-to-width ratio is about 9/4:1, with maximum thickness occurring just above the shoulder line. The longitudinal cross-section tends to be a combination of biterminally-asymmetrical biconvex and asymmetrically biconvex; in transverse section both specimens are symmetrically biconvex. The blade is either ovate or contracting-ovate in outline, symmetrical, roughly percussion-flaked and irregular in edge treatment. One broken specimen was reworked to produce a short almost equilateral blade. Hafting elements are symmetrical and evenly chipped, with the shoulders generally forming tightly rounded obtuse angles with the blade and more broadly rounded obtuse angles with the lower subelement of the haft area. The stem is parallel-sided and of moderate length, joining with a straight or slightly subconcave, evenly chipped base in angular or very nearly angular points of juncture. The base-to-blade width ratio is about 5/8:1. Specimens of Type 24 are made of fine-grained black or mottled brown flint.

Stratigraphic Distribution: Both specimens of this type were found in level 4. An evaluation of the nature and relations of levels 3, 4, and 5 indicates that these points were originally deposited in level 5.

Age and Cultural Affinity: These specimens are unmistakably of the Genesee point caste, a type described by Ritchie (1961:24), which has been radiocarbon dated at the Fontenac Island site in New York over the range 3000-1700 B.C., with the median date falling at about 2000 B.C. The stratigraphic provenience of the Sheep Rock specimens correlates well with the 2000-1700 B.C. segment of this range.

References: Alam 1961, p. 74, Plate 7, 2nd row, 1st at right; Broyles 1964, p. 23, Fig. 11, 1st, 3rd from left; Byers 1959, p. 245, Fig. 3, 1, 2, 3; Ritchie 1961, p. 77, Plate 10, 1; Ritchie 1965, p. 157, Plate 51, 22.

Type 25 (Fig. 7c)

General Description: This broadly corner-notched type is moderately long and thick and relatively wide. Length-to-width ratio is 3/2:1, with maximum thickness occurring at a point on the longitudinal axis about 1/3 of the distance from the tip to the base. Longitudinal cross-section is either biterminally-asymmetrical biconvex or asymmetrically biconvex and transverse section either symmetrically or asymmetrically biconvex. The blade is symmetrically ovate and quite rounded in outline, crudely percussion-flaked, and irregular in edge treatment. Hafting elements are nearly symmetrical, with the shoulders forming angular or sharply rounded acute angles with the blade and generally broad continuously rounded acute angles with the lower subelement of the haft area. Notches are deep and may or may not be smoothed. The stem is excurvately expanding and moderately long, joining with a straight or slightly subconvex, smoothed base in very sharply rounded points of juncture. The base-to-blade width ratio ranges from slightly less than 1/2:1 to about 5/8:1. One specimen (Fig. 7c) is made of a fine-grained beige siltstone, through which a thin black band passes diagonally across the blade, and the other of coarse-grained, deep-red jasper.

Stratigraphic Distribution: Points of this type were excavated from levels 4 and 3. The lower part of the latter level is believed to be the origin of both specimens.

Age and Cultural Affinity: This type is another variant of the Transitional Broad Spear point complex defined by Witthoft (1953). It is distinguished from all other forms discussed above under Types 20, 21, and 28 by its true broad-bladed appearance, by well-developed almost horizontal, angular shoulders, and by the distinctive materials of which it is made. In form, Type 25 combines many of the features of both the Susquehanna and Perkiomen Broad Spear points shown by Witthoft (1953:29-30). The type is a diagnostic feature of the Transitional period (ca. 1500-1000 B.C.) and is found throughout Pennsylvania and in parts of New Jersey, New York and the Hudson Valley.

Reference: Witthoft 1953, p. 29, Plate 1, and p. 30, Plate 2 (no single example approximates the combination of characters of the Type 25 specimens).

Type 26 (Fig. 7b)

General Description: This is an exceptionally thin, medium-sized point type with a length-to-width ratio of nearly 2:1. Maximum thickness is generally located at or a little above the shoulder line. Both the longitudinal and transverse cross-sections tend to be biplano or plano-convex in configuration. Blades usually are symmetrically ovate, steeply beveled, and roughly percussion-flaked. In all examples edge treatment is very irregular, giving a rather coarse appearance to the blade as a whole. Hafting elements are symmetrical, with the shoulders forming angular obtuse angles with the blade and almost continuously rounded obtuse angles with the lower sub-element of the haft area. Notches are very shallow, rather narrow and unground. The stem is generally short, almost as wide as the blade, and joins with a straight or slightly subconvex trivectoral base in angular proximal points of juncture. The base tends to be biterminally-curvate. Virtually all edges are irregular in edge treatment. The material from which these specimens are made varies from a low grade, light-red jasper in one example to grainy and glassy, black and mottled gray flints in the other two.

Stratigraphic Distribution: Type 26 was found in both levels 4 and 3 and is believed to be a function of the latter.

Age and Cultural Affinity: The thinness, beveling, shallow side notches, and blade-like characters of these points are all hallmarks of the Meadowood point described by Ritchie (1961:35). They differ from the neatly prepared New York specimens only in their rather rough appearance. The type has been radiocarbon dated at three different sites in New York to 1000-600 B.C. On the basis of Vinette 1 ceramic associations the Meadowood phase is assigned to the Early Woodland period (Ritchie 1965:179).

References: Ritchie 1961, p. 89, Plate 17, 5, 8; Ritchie 1965, p. 181, Plate 60, 1, 2, 16.

Type 27 (Fig. 7d)

General Description: Type 27 is a medium sized, side-notched point of moderate thickness, with a length-to-width ratio of about 2:1. The area of greatest thickness occurs between the midline and shoulders of the point. In longitudinal cross-section specimens are either biterminally-asymmetrical biconvex or asymmetrically biconvex; in transverse section they are asymmetrically biconvex. Blades are relatively long and narrow, symmetrically ovate in outline, roughly percussion-flaked, with a minimal amount of marginal retouch, and irregular in edge treatment. Hafting elements are also symmetrical, with the shoulders forming angular obtuse angles with the blade and continuously rounded acute angles with the lower subelement of the haft area. Notches are small and shallow, irregular in edge treatment in some specimens and smoothed in others. The stem is equal in width to the blade and contracts slightly toward the lower terminal points of the base, which is straight in outline, irregular in edge treatment and thinned. Proximal points of juncture are either angular or sharply rounded. The base is only slightly narrower than the blade. Both specimens are made of fine-grained dark-brown or mottled dark-gray flint. In overall form these points are similar to the Meadowood type discussed above. They differ, however, in that Type 27 is much thicker and narrower, and is thinned and more rectangular in the stem area.

Stratigraphic Distribution: Type 27 is found in both levels 4 and 3 and is believed to be a function of level 3.

Age and Cultural Affinity: The type is equated with the Raccoon side-notched point described by Mayer-Oakes (1955:86-87) and provisionally assigned by him to the Middle Woodland period. Type 27 is also equated with the unnamed and less frequently found of the two Early Point Peninsula side-notched point types defined by Ritchie (1965:210-211). Like the "Raccoon Notched" variety, it also dates to the Middle Woodland period sometime between 600 B.C. and 200 A.D.

References: Mayer-Oakes 1955, p. 86, Plate 34, Bottom row, 1st and 2nd from left; Ritchie 1965, p. 239, Plate 82, 13, 14.

Type 28 (Fig. 7e)

General Description: Type 28 is a large corner-notched point of medium thickness, with a length-to-width ratio of almost 2:1. Maximum thickness is located between the shoulders. In longitudinal and transverse cross-section the point is asymmetrically biconvex. The isosceles-ovate blade is long and broad relative to the stem, symmetrical, and boldly percussion-flaked. Though marginally retouched, the lateral edges are irregular in outline. Hafting elements are symmetrical, with the shoulders forming rounded obtuse angles with the blade and rounded right angles with the lower subelement of the haft area. Shoulders tend to be slightly convex in outline. Notches are of moderate depth and are ground. The stem is short relative to the length of the blade and expands outward from the longitudinal axis to join with the ground, biterminally-curvate base in rounded points of juncture. The configuration of the base and stem is "ear-like" in appearance, with the base measuring 2/3 the width of the blade. The point is made of mottled purplish rhyolite.

Stratigraphic Distribution: Type 28 was recovered from level 3.

Age and Cultural Affinity: This specimen is a classic example of the Susquehanna Broad Spear point defined by Witthoft (1953) and dates by definition to the Transitional period (ca. 1500-1000 B.C.).

Reference: Witthoft 1953, p. 29, Plate 1, 26 (the shoulders are broader and more angular than the specimen described above).

Type 29 (Fig. 7f,g,h)

General Description: This stemmed point type is of moderate length and width and is relatively thick. Length-to-width ratio varies between 2:1 and 3:1, with maximum thickness occurring well up on the blade past the midline. In longitudinal cross-section specimens tend to be biterminally-asymmetrical biconvex, while in transverse they are all asymmetrically biconvex. Blades are long and generally narrow, ovate in outline, approximately symmetrical, and crudely percussion-flaked. Edge treatment is very irregular in all examples. Hafting elements are symmetrical, with the shoulders forming both angular and rounded obtuse angles with the blade and broadly rounded right or obtuse angles with the lower subelement of the haft area. Notches usually are shallow and broad and are occasionally ground. The stem is broad relative to the width of the blade, moderately long, and expands excurvately away from the longitudinal axis, joining with a subconcave, subconvex, or nearly straight base in variably rounded points of juncture. The base is irregular in edge treatment, except in ground examples where it is even, and measures about 3/4 the width of the blade. Five specimens are made of grainy black or dark-brown flint, two of rhyolite, one of mottled red and yellow jasper, and one of an unidentifiable material.

Stratigraphic Distribution: Three specimens of Type 29 were found in level 3 and two in level 2. Three specimens lack stratigraphic provenience. All are believed to have derived from level 3.

Age and Cultural Affinity: A search of the literature failed to reveal any previously ascribed type designation with which these points may be associated, and they are here termed Juniata Stemmed. Though somewhat variable in form, they are in many ways similar to the more refined points of the Late Archaic. Some specimens are reminiscent of Lamoka and others of Bare Island variants. All are diagnostically thick, crude, stemmed or slightly corner-notched and tend to be associated with a Vinette 1-like pottery termed by Huner (Chapter 11:468) Juniata Thick. A comparable set of points associated with this pottery type was excavated from the Heck rock shelter by Kinsey (1958: 1-4), who also noted similarity to Archaic forms of the Hudson Valley of eastern New York and to Late Archaic to Early Woodland forms at the Dixon and Rohr rock shelters of West Virginia (Dragoo 1959:147-187).

Reference: Kinsey 1959, p. 2, I, 1st, 3rd, and 4th from left.

Type 30 (Fig. 8a,b)

General Description: This corner-notched type is of moderate size in all dimensions. Length-to-width ratio ranges between 3/2:1 and 2:1, with the area of maximum thickness located just above the shoulder line. In longitudinal cross-section all specimens are biterminally-asymmetrical biconvex and in transverse section asymmetrically biconvex. The blade is relatively broad and short, symmetrically ovate in outline, roughly percussion-flaked, lightly marginally retouched, and irregular in edge treatment. Extensive hinge-fracturing has produced distinct humps on two specimens. Hafting elements are also symmetrical, with the broad shoulders forming rounded obtuse angles with the blade and lower subelement of the haft area. Notches are deep and broad and are sometimes smoothed. The stem is well-proportioned in relation to the blade and expands somewhat before joining with a subconcave, ground base in rounded points of juncture. The base measures 2/3 the width of the blade. One specimen is made of a coarse grained, light gray flint, another of rhyolite, and the third of mottled gray-white limestone.

Stratigraphic Distribution: The limestone example of this type was excavated from level 3 and the other two specimens from the lower part of level 2. All are believed to be a product of level 3 occupation.

Age and Cultural Affinity: Type 30 is a variant of the Perkiomen Broad Spear point described by Witthoft (1953) and Ritchie (1961). In form it approximates more closely the New York examples of this type. Witthoft has suggested that the Susquehanna Broad Spear gave rise to this and other related forms but cautions that there does not "seem to be any very significant time differences among them" (Witthoft 1953:16). At Sheep Rock, however, the Perkiomen points as a group do appear to follow in time the Susquehanna Broad Spear variants discussed above (Types 20, 21, and 25).

References: Mayer-Oakes 1955, p. 61, Plate 15, A, 2nd from right; Ritchie 1961, p. 99, Plate 23, 2; Ritchie 1965, p. 154, Plate 50, top row, 1st at left, 4th row, 2nd from left.

Type 31 (Fig. 8c)

General Description: Specimens of this corner-notched type are of moderate size in all dimensions. Length-to-width ratio is 2:1, and the area of maximum thickness is located approximately midway between the shoulders and the tip. In longitudinal cross-section the type is biterminally-asymmetrical biconvex or asymmetrically biconvex, and in transverse section it is asymmetrically biconvex. Blades are ovate in outline, symmetrical and asymmetrical, and skillfully pressure-flaked so as to produce characteristic delicately serrated lateral edges. Hafting elements are approximately symmetrical, with the barbed shoulders forming angular acute angles with the blade and rounded acute angles with the lower subelement of the haft area. Notches are moderately deep and are unsmoothed. The stem is broad and short in relation to the blade and flares outward sharply from the longitudinal axis to join with a subconvex to convex base in angular points of juncture. Bases are nearly as wide as blades and are lightly smoothed but irregular in outline. One example is made of a distinctive mottled, milky-white glassy chert and the other of a glassy dark-gray flint.

Stratigraphic Distribution: Both specimens were excavated from the upper part of level 3.

Age and Cultural Affinity: In basal and notch configuration these specimens resemble Snyders Notched points (Conrad 1966:35). They differ considerably from this type, however, in the shape and geometric proportions of the blade. A closer approximation is to be found in some West Virginia and New York specimens (cited below), the latter also being equated by Ritchie (1961:49, 105) with the Snyders point (Scully 1951:12; Bell 1958:88-89). The type is diagnostic of Hopewellian culture of Middle Woodland age (ca. 500 B.C.-500 A.D.).

References: Conrad 1966, p. 35, Plate 13, 2nd row, 1st at left, bottom row, 1st at right; Cross 1956, Vol. II, Plate 20b, top row, 1st at left; Davis et al., 1962, p. 30, Plate 12, upper row, 3rd from right; Ritchie 1961, p. 105, Plate 28, 2; Ritchie 1965, p. 219, Plate 74, 4, p. 222, Plate 76, 2, 5.

Type 32 (Fig. 8d)

General Description: This broad-stemmed lanceolate point as moderately developed in all dimensions. Length-to-width ratio is 3/2:1, with the area of maximum thickness occurring on the longitudinal axis about 1/3 the distance from the tip to the base. In longitudinal cross-section the specimen is both biterminally-asymmetrical biconvex and asymmetrically biconvex; in transverse section it is asymmetrically biconvex. The blade is symmetrically ovate in outline, roughly percussion-flaked and irregular in edge treatment. Hafting elements are asymmetrical, with the narrow and steeply sloping shoulders forming sharply rounded obtuse angles with the blade and broadly rounded descending obtuse angles with the lower subelement of the haft area. Notches are shallow, broad and unground. The stem is broad and thick, moderately long, rectangular in configuration, uneven in edge treatment, and oriented at an angle of about 10° relative to the longitudinal axis. The base is straight, biterminally-curvate and unground. Base-to-blade width ratio is about 7/8:1. This specimen is made of brown, coarse-grained flint.

Stratigraphic Distribution: Type 32 was found in level 2.

Age and Cultural Affinity: Though no comparable examples of this type can be offered, such features as the bulbous, crude appearance of the blade, the overall rough surface treatment, and the straight, thick stem all suggest affinity with the Juniata Stemmed point (Type 29) discussed above. Stratigraphically, Type 32 occurs in the upper of the two contiguous levels in which the Juniata Stemmed points are found. Its shallow haft elements, broad rectangular stem, and squat truncated-lanceolate form are the salient features which both characterize and place it outside the range of variability of Type 29.

Type 33 (Fig. 8e)

General Description: Type 33 is a medium sized straight-stemmed point of moderate thickness, with a length-to-width ratio of 2:1. Maximum thickness occurs just above the shoulder line. In longitudinal cross-section points of this type are both biterminally-asymmetrical and asymmetrically biconvex, while in transverse section they are asymmetrically biconvex. Blades are relatively long and well proportioned, symmetrically triangular in outline, roughly percussion-flaked and marginally retouched, so as to produce serrated lateral edges. Hafting elements are irregular in edge treatment and symmetrical, with the shoulders forming sharply rounded acute or obtuse angles with the blade and lower subelement of the haft area. The stem is short and nearly straight, joining with a straight base in angular or rounded points of juncture. One specimen retains a flat remnant of the striking platform from which it was struck. Both specimens are rough in appearance. The points are made of red jasper and fine-grained, mottled gray chert.

Stratigraphic Distribution: Both examples of this type were excavated from level 2.

Age and Cultural Affinity: A search of the literature failed to reveal any previously ascribed type designation with which these points may be associated. Its stratigraphic provenience suggests a post-Middle Woodland date, which coincides with the temporal association of a remarkably similar point excavated from the Cain mound in New York (Ritchie 1965: 218-221).

Reference: Ritchie 1965, p. 219, Plate 74, 5.

Type 34 (Fig. 8f)

General Description: Type 34 is a large, moderately thick, straight-stemmed point prepared from a broad lamellar flake. Its length-to-width ratio is 2:1, with maximum thickness occurring at two points, one between the shoulders, and the other well up on the blade about 1/3 the distance from the tip to the base. In both longitudinal and transverse cross-section the specimen is biplano. The blade is roughly symmetrical, ovate in outline, crudely percussion-flaked, irregular in edge treatment, and beveled at an angle of about 30°. Hafting elements are approximately symmetrical, with the shoulders forming angular or rounded acute and right angles with the blade and rounded acute or right angles with the lower subelement of the haft area. The stem is parallel-sided and relatively short, joining with the broken (probably straight) base in angular points of juncture. The point is made of coarse-grained gray flint. In general appearance it is crude and irregularly shaped.

Stratigraphic Distribution: Type 34 was excavated from level 2.

Age and Cultural Affinity: Type 34 probably dates to the Late Woodland period. Its cultural affinity, however, is unknown.

Type 35 (Fig. 9a)

General Description: Type 35 is a moderately thick, medium-sized side-notched point with a length-to-width ratio of 9/4:1. The area of maximum thickness is located about 1/3 the distance from the tip to the base. In longitudinal and transverse cross-section the point is asymmetrically biconvex. The blade is asymmetrically ovate and slender in outline, well-percussion-flaked (with some evidence of pressure retouching), and evenly chipped along the lateral edges. Hafting elements are asymmetrical, with the steeply sloping shoulders forming broadly rounded obtuse angles with the blade and continuously rounded obtuse angles with the lower subelement of the haft area. Notches are broad, moderately deep and ground. The stem is moderately long, expanding outward from the longitudinal axis to join with the straight, smoothed base in rounded points of juncture. The point is made of purple rhyolite.

Stratigraphic Distribution: This specimen was excavated from the interface between levels 2 and 3 and is believed to have been deposited in level 3.

Age and Cultural Affinity: Type 35 bears a strong resemblance to the characteristic fishtail point type of the Orient complex described by Ritchie (1961:39) which has been radiocarbon dated between 1044±300 B.C. and 763±220 B.C. The type is most frequently found in eastern New York and occurs sporadically in northern and central New Jersey as well as in central and eastern Pennsylvania and areas to the north of New York.

References: Ritchie 1961, p. 93, Plate 19, 1, 2; Ritchie 1965, p. 157, Plate 51, 13; Witthoft 1965, p. 25, 1.

Type 36 (Fig. 9b)

General Description: This corner-notched type is small in all dimensions. Length-to-width ratio is 5/4:1, with the area of maximum thickness constituting almost the entire surface of the blade. In both longitudinal and transverse cross-section the point is biplano. The blade is symmetrically ovate in outline, roughly pressure-flaked, irregular in edge treatment, and beveled at an angle of about 30 degrees. Hafting elements are symmetrical, with the shoulders forming rounded obtuse angles with the blade and continuously rounded obtuse angles with the lower subelement of the haft area. Notches are extremely shallow, relatively broad and are not ground. The stem is as broad as the blade and is very short, contracting slightly from the sharply rounded proximal points of juncture to join with the biterminally-angular, subconcave-trivectoral base. The base presents a flat concave surface which is unretouched and unground. The point is made of mottled gray chert.

Stratigraphic Distribution: This specimen was found in level 2.

Age and Cultural Affinity: The chronologic provenience of this type is probably Late Woodland, but its cultural affinity is unknown.

Reference: Stackhouse and Corl 1962, p. 10, Plate 4, 20.

## TRIANGULAR POINTS

Triangular points lack the complicating features associated with the notch and stem complexes of the types described above. In effect, they constitute only the blade and base elements of these points and are therefore relatively simple in formal content. An evaluation of the possibilities for formal variation given a three-dimensional triangle model and of variation intrinsic to the triangular points from Sheep Rock suggested that seven attribute classes are sufficient, in the absence of known cultural associations, to differentiate inherent types in the collection of seventy-six identifiable triangular projectile points. These are: (1) Blade Form, (2) Base Form, (3) Length, (4) Width, (5) Thickness, (6) Length-to-Width Ratio, and (7) Surface Treatment. With the exception of the last, which is simply a presence/absence distinction between percussion and pressure-flaking, these attribute classes are used as defined in Appendix A. Five categories of triangular points are defined below on the basis of unique combinations of these criteria. For clarity, additional defining characteristics are included.

Two major difficulties have hampered an attempt to relate these point types unequivocably to the culture-historical sequence of Pennsylvania. First, a complete feature analysis is still to be conducted, and associations connecting these with pottery and projectile points have not yet been designated. Second, the upper master levels (particularly levels 2 and 3) apparently are insensitive to the culture sequence known from the presence of distinctive varieties of pottery at the site which characterize the Early-Middle-Late Woodland and Proto-Historic periods.

Thus neither stratigraphy nor associations of any kind can be used as an independent check on the validity of types arrived at solely on the basis of visual sorting and attribute analysis (the validity of which is contingent upon the attributes selected being culturally significant). All that can be said of these "types" is that they represent significantly different, unique clusterings of seven attributes. Whether or not they correspond to real cultural entities cannot yet be demonstrated. Table 2 presents a statistical summary of the salient features of these types. Coded numbers (defined in Appendix A) head the columns for Blade and Base Form. All values given are percentages of the sample size (N) of each type, which is provided in the column at the top of the page. Surface treatment (S.T.) is marked either by the number 0 (Presence of pressure-flaking/Absence of percussion-flaking as the final step of preparation) or by the symbol + (Absence of pressure-flaking/Presence of percussion-flaking as the final step of preparation). Neither of the two other possibilities appears to be represented. The columns for Length, Width and Thickness are self-explanatory (the mean, range and standard deviation of each is given by point type). Length-to-Width Ratio is also self-explanatory.

The nine remaining columns present a statistical summary of significant and non-significant between-type differentiation in Length, Width and Length-to-Width Ratio based on a T-test analysis of these parameters. Here, explicit statement is given to what could be inferred with reasonable certainty from the magnitude of the standard deviation and the difference of means. If the absolute difference between any two means is not at least as great as the standard deviation associated with either variable, there is a good chance that the variation of one is not significantly different from that of the other. The type-numbers of triangular variants being compared appear in parentheses following the name of the parameter under consideration. These statistics have not been calculated for Types 40 and 41, since in one case the sample size is too small to yield any very meaningful results and Base Form alone is sufficient to distinguish the type; in the other case Surface Treatment and Thickness are together diagnostic and sufficient for identification.

Between Types 37, 38, and 39, however, there is considerable overlap in variability with respect to virtually all attribute classes. It is by evaluation of the total combination of these properties, therefore, that individuals are classified as to type.

Type 37 (Fig. 9c,d)

General Description: Type 37 is characterized by triangular or ovate blades, straight and biterminally-curvate subconcave bases, pressure-flaked surface treatment, moderate dimensions, and a distinctively small length-to-width ratio (1.1:1),

Table 2

## SUMMARY OF TRIANGULAR POINT FEATURES

L:W (38/38) Nonsignificant ($t=1.52$, $p<0.2$, $>0.1$)
L:W (37/39) Significant ($t=4.84$, $p<0.001$)
L:W (37/38) Significant ($t=4.1$, $p<0.001$)
Width (38/39) Significant ($t=9.09$, $p<0.001$)
Width (37/39) Significant ($t=11.66$, $p<0.001$)
Width (37/38) Nonsignificant ($t=1.30$, $p=0.20$)
Length (38/39) Significant ($t=4.16$, $p<0.001$)
Length (37/39) Nonsignificant ($t=0.83$, $p<0.4$, $>0.2$)
Length (37/38) Significant ($t=3.22$, $p<0.005$)

| | | 37 | 38 | 39 | 40 | 41 |
|---|---|---|---|---|---|---|
| N | | 22 | 13 | 15 | 4 | 19 |
| L/W Ratio | | 1.1 | 1.3 | 1.4 | 1.3 | 1.3 |
| Thickness | Mean | 4.5mm | 3.2mm | 3.6mm | 4.5mm | 6.6mm |
| | Range | 4-6mm | 3-4mm | 3-5mm | 4-5mm | 5-10mm |
| Width | Mean | 23mm | 22mm | 16mm | 24mm | 20mm |
| | Range | 20-27mm | 17-25mm | 13-19mm | 21-26mm | 14-27mm |
| | S. D. | 1.9mm | 2.1mm | 1.6mm | 1.9mm | 3.6mm |
| Length | Mean | 24mm | 28mm | 23mm | 33mm | 27mm |
| | Range | 18-30mm | 22-36mm | 14-31mm | 27-38mm | 17-41mm |
| | S. D. | 3.4mm | 3.2mm | 3.8mm | 4.1mm | 5.2mm |
| S. T. | | 0 | 0 | 0 | 0 | + |
| Base Form | 24 | | | | 50 | |
| | 15 | | | | 50 | |
| | 14 | 7 | | | | 16 |
| | 13 | | 8 | | | |
| | 12 | 47 | 38 | 46 | | 16 |
| | 11 | | 38 | 23 | | 11 |
| | 7 | | | | | 5 |
| | 6 | | | | | 5 |
| | 5 | 7 | | 9 | | 11 |
| | 2 | 13 | | 9 | | |
| | 1 | 26 | 16 | 23 | | 37 |
| Blade Form | 4 | 47 | 46 | 18 | 75 | 79 |
| | 3 | 13 | 8 | 9 | | 5 |
| | 1 | 40 | 46 | 73 | 25 | 16 |

which is a function of its basically equilateral form. The type is also relatively thick, averaging about a millimeter more than both Types 38 and 39. In longitudinal section most examples are symmetrically or asymmetrically biconvex and are often biterminally asymmetrical. The transverse section is more often asymmetrically than symmetrically biconvex. Virtually all specimens possess steeply tapered lateral edges not unlike beveling. This feature stands in direct contrast to all other triangular types where blades are continuously rounded and lack a tendency towards lateral ridging. Type 37 is rougher in appearance than either of Types 38 or 39, owing in part to the generally grainy flint of which the specimens are predominantly made, and to the considerable amount of rough pressure-flaking and what in some cases may have been punch-produced percussion-flaking.

Stratigraphic Distribution: Three specimens of this type derive from level 3; the remaining twelve were excavated from level 2.

Age and Cultural Affinity: Type 37 is identical to the Levanna type defined by Ritchie (1961:31) for the New York area where it made its first appearance around 700 A.D. in late Middle Woodland times. After 900 A.D. it became the dominant projectile point form and persisted throughout the Late Woodland period into the 14th century, a time span which may be postulated for the Sheep Rock shelter. The type is particularly associated with Owasco culture, also represented at this site, and appears to have undergone a gradual modification towards a smaller and more isosceles form in later Owasco times (Ritchie 1965:275-276). Though the historical sequence is somewhat different in Pennsylvania a similar pattern is observed at Sheep Rock.

References: Ritchie 1961, p. 87, Plate 15, 1, 3, 8, 9; Ritchie 1965, p. 258, Plate 88, 51-53, 61-63, 69-70.

Type 38 (Fig. 9e)

General Description: In outline, blades of this type are distinctly more isosceles than in Type 37. Bases are predominantly biterminally-curvate subconcave, but infrequently are straight and biterminally-angular. The length-to-width ratio of these points averages 1.3:1, differing significantly from Type 37 (but not from Type 39) due principally to an increase in length relative to the width, which is virtually the same in both. Type 38 is also thinner by about a millimeter. In all cases surface treatment involves skillful pressure-flaking. Longitudinal and transverse cross-sections are almost always asymmetrically biconvex; occasional exceptions are biterminally-asymmetrical biconvex. Most specimens are made of a black, fibrous-interior, translucent chalcedony of high quality; others are made of various shades of light-gray, glassy flint. Both materials contrast sharply with that of Type 37.

Stratigraphic Distribution: One specimen was removed from level 1; ten were taken from level 2, and two from level 3.

Age and Cultural Affinity: Type 38 is indistinguishable from the Shenk's Ferry triangular points recovered from the Blue Rock site by Heisey and Witmer (1964:20). Shenk's Ferry occupation dates to the Proto-Historic of about 1500-1550 A.D.

Reference: Heisy and Witmer 1964, p. 20, Plate 5, bottom two rows.

Type 39 (Fig. 9f,g,h,)

General Description: The predominant blade form of this type is triangular; occasionally, specimens may be ovate or incurvate. Base outline is somewhat variable but is most often subconcave or straight. Basal corners are either rounded or angular. Surface treatment generally involves skillful pressure-flaking. Type 39 has the largest length-to-width ratio of all the triangular variants, averaging about 1.4:1, and in a few very isosceles examples is as much as 2.1:1. However, in this parameter it is statistically distinct only from Type 37. Length and width comparisons present a different picture. In width, Type 39 is the smallest of the point types, and in length only Type 38 is not differentiable. Most specimens tend to be a combination of biterminally-asymmetrical biconvex and asymmetrically biconvex in longitudinal section, and in transverse section all are asymmetrically biconvex. Gray, brown, and black glassy flints are the materials from which most specimens of this type are made. Occasionally, black chalcedony or a fine-grained flint is also used.

Stratigraphic Distribution: Two specimens of Type 39 were excavated from level 1, thirteen from level 2, and seven from level 3. A seriation of this and the two previous types using an integration of the north-south profile levels constructed by Horn failed to yield any significant stratigraphic differentiation (see Table 3).

Age and Cultural Affinity: This type corresponds to the Madison points described by Ritchie (1961:33-34). It is a Late Woodland to Proto-Historic form diagnostic in the Northeast of Iroquoian occupation and is the culmination of a shift towards a more isosceles form from early Owasco to Late Iroquois (Ibid.; Ritchie 1965:275-276). In central and eastern Pennsylvania the type is most closely associated with the Historic Iroquois Susquehannocks.

Table 3

STRATIGRAPHIC DISTRIBUTION OF
TRIANGULAR POINT TYPES 37, 38 AND 39

| Master Level | Sub-master Level | | Type 37 Lavanna N | %N | %▲ | Type 38 Shenk's Ferry N | %N | %▲ | Type 39 Susquehanna N | %N | %▲ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 1 | 7.7 | 1.3 | 2 | 9.2 | 2.6 |
| | | % | | | | 1 | 7.7 | 1.3 | 2 | 9.2 | 2.6 |
| 2 | Upper | | | | | 2 | 15.4 | 2.6 | 5 | 22.7 | 6.6 |
| | Lower | | 12 | 80.0 | 15.8 | 8 | 61.5 | 10.6 | 8 | 36.4 | 10.5 |
| | | % | 12 | 80.0 | 15.8 | 10 | 76.9 | 13.2 | 13 | 59.1 | 17.1 |
| 3 | Upper | | | | | | | | 3 | 13.6 | 3.9 |
| | Middle | | 3 | 20.0 | 3.9 | 1 | 7.7 | 1.3 | 3 | 13.6 | 3.9 |
| | Lower | | | | | 1 | 7.7 | 1.3 | 1 | 4.5 | 1.3 |
| | | % | 3 | 20.0 | 3.9 | 2 | 15.4 | 2.6 | 7 | 31.7 | 9.1 |
| | Total | | 15 | 100 | 19.7 | 13 | 100 | 17.1 | 22 | 100 | 28.8 |

%▲ = percentage of the total number of triangular points of each respective type.

% = percentage of the total number of triangular points (76).

N = number of triangular points of the respective types.

References: Heisey and Witmer 1964, p. 20, Plate 5, upper two rows; Kinsey 1960, p. 87, Figure 6, upper two rows; Ritchie 1961, p. 88, Plate 16, 11, 12, 15, 16, 24-26; Ritchie 1965, p. 307, Plate 106, 7-9; Stackhouse and Corl 1962, p. 10, Plate 4, 12, 13, 14.

Type 40 (Fig. 10a)

General Description: In blade form this distinctive minority type tends to be isosceles-triangular or ovate. Diagnostically, bases are triangulo-concave. In two of the four specimens the terminal and medial points of juncture of the base are curvate. Thickness averages 4 mm, and length-to-width ratio ranges between 1 and 1.5:1, with the median falling at 1.4:1. In longitudinal and transverse cross-section,points of this type may be either symmetrically or asymmetrically biconvex. One specimen is made of a fine-grained black flint; two points are made of black fibrous-interior chalcedony; the fourth specimen is made of banded gray and white chert. All exhibit skillful pressure-flaking, but edge treatment is in general somewhat irregular.

Stratigraphic Distribution: Type 40 is restricted to level 2, in which it has a wide distribution over the site.

Age and Cultural Affinity: A search of the literature failed to reveal any previously ascribed type designation with which these points may be associated, and its occurrence is apparently rare. The type is here designated Sheep Rock Triangular (with respect to its distinctive basal configuration).

References: Cross 1956, Vol. II, Plate 14a, 2nd row, 1st at right, Vol. II, Plate 20a, top (double) row, 1st at right; Stackhouse and Corl 1962, p. 10, Plate 4, 11.

Type 41 (Fig. 10b)

General Description: Blades of this type are predominantly ovate and asymmetrical in outline; occasionally they are triangular. Bases are highly fluid in form, varying from concave to convex, with both angular and rounded points of juncture. The majority, however, approximate a straight, biterminally angular configuration. All specimens are diagnostically thick relative to the other triangular point types. Length-to-width ratio averages 1.3:1 and is significantly different only from Type 37. Another diagnostic feature of this type is a crude appearance resulting from very rough percussion-flaking. Specimens are often extremely irregular in edge treatment as well as in outline.

Stratigraphic Distribution: One point was excavated from level 4; eight specimens were taken from level 3, and nine from level 2; and one point was found in level 1.

Age and Cultural Affinity: A search of the literature failed to reveal any previously assigned type designation for these distinctive points, perhaps because they are often considered to be blanks or rejects and not a functional tool type. At Sheep Rock they are found in all levels where other triangular forms occur, but on a percentage basis they are the most heavily represented point type in level 3, which initiates the triangle sequence, with Type 39 running a close second. Type 39, however, is assumed to be late (Proto-Historic) and its representation in level 3 to be a function of widespread pitting of the site by Susquehannock occupants. In the absence of known cultural affinity and feature associations within the site, the chronologic provenience of Type 42 can only be inferred on the basis of stratigraphic distribution. It has already been shown, however, that the upper master levels (levels 3 and 2) are insensitive to the post-Transitional culture-historical sequence at the site. Its heavy representation in level 3, therefore, cannot be demonstrated to be a function of human occupation of that level; nor can its distribution be used to argue for an earlier chronologic priority over other triangular point types. Evaluation of these considerations, therefore, must await re-analysis of the upper stratigraphy of the site and of the features contained therein.

References: Gleason 1958, p. 85, Plate 1, top row, 3rd from left; Stackhouse and Corl 1962, p. 10, Plate 4, 15, 16, 22; Thompson 1954, p. 124, Fig. 7, 2nd row, 1st, 2nd, 5th from right, bottom row, 3rd, 4th from left.

## KNIVES

At present, twenty-two typological varieties of what are functionally classified as knives are recognized in the Sheep Rock collection. These fall into two general classes: (1) those which constitute utilized flakes of appropriate configuration and which lack retouching of any sort, and (2) those which are bifacially prepared over most or all of the surface. Unifacially prepared knives are absent in the collection, and only one specimen shows marginal retouch on a single face. Within this second class three formal subclasses are recognized: (1) free-form knives, those which lack a simple basic geometric form; (2) triangular knives, those which are obviously triangular in configuration; and (3) lanceolate knives, elongate forms which may or may not be notched (and therefore stemmed).

Utilized Flake Knives

Type A (Fig. 11a). Utilized Crescent Flake Knives. These are crescent-shaped lenticular spalls, one end of which (in complete specimens) retains a remnant of a striking platform and the positive bulb of percussion. A generally well-defined median ridge sweeps in an arc across the length of one face. The transverse section is triangulo-subconvex in outline. Minute flake scars occur along both sides of the convex lateral edge of the flint specimen over approximately 1/2 its length. The other specimen is made of limestone which is smoothed on all edges and ridges.

Type B (Fig. 11b). Utilized Lobate Flake Knife. Only one example of this type was found. It is a thick lenticular flake, one end of which retains the remnant of a striking platform. Use chipping extends along both sides of an uninterrupted convex edge. The piece is trapezoidal in transverse cross-section.

Type C (Fig. 11c). Single-Edge Unifically Marginally-Retouched Flake Knife. A thick concoidal flake with a pronounced hump asymmetrically positioned. The convex lateral edge is marginally retouched on one face only. The specimen is asymmetrically biconvex in transverse section.

Free-Form Bifacially Prepared Knives

Type D (Fig. 12a). Large Asymmetrically Leaf-Shaped Knives. Specimens of this type are biconvex in transverse section and roughly percussion-flaked. All are moderately thick and wide and relatively long.

Type E (Fig. 12b). These are relatively thick, crudely percussion-flaked, asymmetrical, biterminally-constricted knives. The type probably constitutes a reworked form of Type H, and the constrictions at either end are probably a function of the relative thickness of the midsection and of the relative ease of modification in these areas.

Type F (Fig. 12c). Knives of this type are small, elongate-ovate in outline, roughly percussion and pressure-flaked, and partially serrated.

Type G (Fig. 12d). Only one specimen of the type was found. It is basically trapezoidal in configuration and is relatively thin. The base is trivectoral, with the lower element constituting the unretouched remnant of a striking platform. The opposite cutting edge is convex in contour. In transverse cross-section the specimen is biconvex.

Type H (Fig. 12e). These are thick, roughly percussion-flaked, crescent knives which characteristically possess a median ridge on one face. Both ends are rounded, and all specimens are triangulo-convex in cross-section.

Type I (Fig. 13a). This is a small, moderately thick, roughly prepared, crescent-shaped knife type similar to Types E and H and may simply represent the final stage of reworking.

Triangular Bifacially Prepared Knives

Type J (Fig. 13b). This symmetrical, straight-based triangular knife form is ovate in blade outline and asymmetrically biconvex in transverse section.

Type K (Fig. 13c). A very thin symmetrical, subconvex-based triangular blade which is similar to Type J. It is ovate in outline and asymmetrically biconvex in transverse section. Though small in size this specimen is probably related to the Meadowood blades of New York (Ritchie 1961:35; Ritchie 1965:179).

Type L (Fig. 13d). A thin, straight-based, excurvate-bladed, roughly pressure-flaked blade with a length-to-width ratio of about 3:1. The specimen is biconvex in transverse cross-section.

Type M (Fig. 13e). These are relatively thin, straight-based blades with highly curvate ovate blades. Length-to-width ratio averages about 1:1. In transverse section both examples are biconvex.

Type N (Fig. 14a). Type N is a large, symmetrical, moderately thick triangular blade with a biterminally-curvate subconcave base. Length-to-width ratio is 2:1. In both longitudinal and transverse cross-section the specimen is biconvex.

Type O (Fig. 14b). This is a large, symmetrically-ovate, moderately thick triangular blade with a subconcave base which is sharply curvate at both ends. The longitudinal and transverse cross-sections are both asymmetrically biconvex.

Type P (Fig. 14c). Specimens of this type are small, asymmetrically-ovate, moderately thick triangular blades. These are roughly percussion-flaked with biterminally-curvate convex bases and a plano-convex longitudinal and transverse cross-section. All are irregular in edge treatment and show heavy use along the reworked lateral edges of the blade.

Lanceolate Bifacially-Prepared Knives

Type Q (Fig. 14d). These are large, moderately thick, elongate-ovate straight-based blades, with a plano-convex or asymmetrically biconvex longitudinal and transverse cross-section. The plano face occasionally shows only marginal retouch. Most specimens are skillfully percussion-flaked over the entire surface. The base is usually biterminally-curvate.

Type R (Fig. 14e). A medium-sized, thick, crudely made, leaf-shpaed, lanceolate knife type. All examples are asymmetrically biconvex in longitudinal and transverse cross-section.

Type S (Fig. 15a). Type S is a large, moderately thick, biterminally-curvate subconcave-based, ovate-lanceolate knife with minimally developed, broad and shallow, ground hafting elements adjacent to the base. All specimens are roughly percussion-flaked and asymmetrically biconvex in longitudinal and transverse cross-section.

Type T (Fig. 15b,c). These are medium- to large-sized, moderately thick, excurvate-bladed, straight- to subconvex-based lanceolate knives with moderately developed, broad and shallow notches which are generally ground. The stem drops almost vertically through the haft area, flanging outward sharply before joining with the biterminally-curvate base, which is equal in width to the blade.

Type U (Fig. 15d). A large, thick to moderately thick, excurvate-bladed, biterminally-curvate subconvex-based, short-stemmed lanceolate knife type with broad, shallow corner-notches. Specimens are asymmetrically biconvex in both longitudinal and transverse cross-section. Base-to-blade width ratio is about 2/3:1.

Type V (Fig. 15e). This is a broad, moderately long and thick excurvate-bladed, straight-based, broadly side-notched lanceolate knife type. The stem is moderately long, with minimally developed shoulders, and expands outward in its descent, flanging outward slightly before joining with the base. Type V is strikingly similar to many of the Steubenville Stemmed points found in New York.

## DRILLS

Six typological varieties of eleven artifacts are functionally classified as drills. All of these were found in the upper three master levels of the site.

Type A (Fig. 16a)

These are long, incurvate-bladed, biterminally-curvate straight-based, roughly percussion-flaked triangular drills. Both the longitudinal and transverse cross-sections are asymmetrically biconvex. Some specimens are relatively thick and all are irregular in edge treatment and tend to be thicker towards one side of the face, sloping off steeply along the adjacent lateral edge.

Type B (Fig. 16b)

This is a relatively thick, slightly incurvate-bladed biterminally-curvate, concave-based triangular drill type. Both the longitudinal and transverse cross-sections are asymmetrically biconvex.

Type C (Fig. 16c)

Only one specimen of Type C was found. It is basically T-shaped with an extremely long blade which expands somewhat at one end before joining with the straight base in rounded points of juncture. Length-to-width ratio is over 4:1.

Type D (Fig. 16d)

This specimen is a long, incurvate-bladed, side-notched, biterminally-curvate subconcave-based form of moderate thickness. Length-to-width ratio is about 3:1. Both the base and notches are ground.

Type E (Fig. 16e)

The two specimens of this type are almost parallel-sided and are convex-based. In profile the drills are cylindrical, and in longitudinal and transverse cross-section they are asymmetrically biconvex. Length-to-width ratio averages about 6:1. Both examples are roughly percussion-flaked.

## SCRAPERS

Several typological varieites of scrapers are recognized in the Sheep Rock lithic assemblage. An analysis of these materials is incomplete at this time, the counts shown in Figure 4 are in no way indicative of the relative representation of the types listed. A substantial number of utilized and minimally shaped flake scrapers form part of the collection, but these have not yet been classified. The types discussed below were chosen for descriptive variety rather than completeness.

Type A (Unillustrated)

Utilized Flake Scrapers. These are simple flakes of variable form which have been used for scraping purposes as indicated by small chipping scars along one face of the use edge. None of these has received shaping of any kind.

Type B (Fig. 17a)

Prismatic Side Scrapers. Examples of Type B are prismatic spalls one or both sides of which have been used for scraping purposes. In large flakes of this type the diagnostic chipping scars may occur on both faces of a lateral edge, indicating that the flake may have been rotated or that it may have been used also as a utilized flake knife.

Type C (Fig. 17b)

Thick Side Scrapers. These are thick concoidal flakes, one or more edges of which have been used with a scraping action. The remnant of a striking platform is retained at the bulbar end.

Type D (Fig. 17c)

Flat-Backed, Snub-nosed End Scraper. This is a relatively thick spall, one end of which is steeply beveled. The opposing truncated end retains a remnant of a striking platform. In transverse cross-section the piece is trapezoidal with the bit equaling in thickness the bulbar end. Type D belongs to a class of objects which have a very wide temporal and geographical distribution. Its stratigraphic context, however, suggests an Early to Middle Archaic date.

Type E (Fig. 17d)

Notched End Scrapers. These are reshaped broken projectile points which in longitudinal and transverse cross-section are asymmetrically biconvex. Blades are symmetrically ovate in outline, irregular in edge treatment, and lack the point of juncture which defines the tip of most points. Instead, the ovate contours of the lateral edges meet head-on in a broadly rounded tip. Hafting elements are roughly symmetrical with variably formed shoulders. Notches are relatively shallow and unground. The stem is moderately wide and expands to a variable degree away from the longitudinal axis towards a straight or subconvex base, with which it joins in angular or rounded points of juncture. One specimen lacks stratigraphic provenience, but stylistically the type falls well within the morphological range of variability of points characterizing the Brewerton complex.

## CORES

Eight typological classes of artifacts are recognized as core materials of various geometrical forms.

Type A (Fig. 18a)

Single Platform Polyhedral Cores. There is only one well-defined plana platform oriented perpendicular to the longitudinal axis. Occasionally a flake or two may have been removed from the unprepared surface, but this appears to be an optional feature.

Type B (Unillustrated)

Biplanar Polyhedral. Two planar platforms are oriented in parallel planes cross-cutting the longitudinal axis at an angle between 60° and 90°.

Type C (Unillustrated)

Plano-beveled Polyhedral. This type is also characterized by two striking platforms positioned at each end, one planar and cross-cutting the longitudinal axis at not greater than a 30° angle, and one beveled at an angle of not less than 30° relative to the longitudinal axis.

Type D (Fig. 18b)

Single Platform Triangular Cores. The attributes characterizing this type are the triangular configuration and quadralateral cross-section. Flakes are struck from the opposing ends of the rectangular platform.

Type E (Unillustrated)

Double Platform Triangular. These are similar to the single platform triangular forms in profile but differ in that the apex of the triangle serves as a secondary platform for the removal of flakes in the direction of the primary striking surface.

Type F (Unillustrated)

Biplanar-Tabular Cores. These are elongate-rectangular in cross-section with platforms situated at either end oriented in parallel planes at not greater than 30° to the longitudinal axis.

Type G (Fig. 18c)

(Modified) Plano-Beveled Tabular Core. These are elongate-rectangular in cross-section with a planar striking platform located at one end and a beveled platform at the other end. The single specimen of this type has been modified to a beveled end scraper along the beveled platform.

Type H (Fig. 18d)

Core Residues. This class constitutes artifacts which are generally small in length and width and relatively thick. Edge treatment is very irregular in all specimens, and surface treatment characteristically consists of a few broad, rough percussion-flake scars. In outline most specimens are egg-shaped.

## STRIKE-A-LIGHT

Strike-A-Light (Fig. 28c)

These three objects are tear-shaped in outline and possess abraded convex ends.

## DETRITUS

Analysis of the chipping debitage has only just begun, and classification by material and size are all that can be offered at this time. Table 4 presents a summary of these properties. Chips have been sorted into three arbitrary size categories: (1) those whose estimated area will fill that of a circle with a diameter of at least 30 mm, (2) those whose estimated area will fill that of a circle with a diameter of at least 20 mm but less than 30 mm, and (3) those whose estimated area will fill that of a circle less than 20 mm in diameter. These sizes are indicated as Large (L), Medium (M), and Small (S), respectively. Sample sizes is given for each material as well as for the three size categories. Also presented under each material are three percentage values which (1) relate the amounts of the material to the total number of chips in the collection, (2) relate the amounts of each material to the total number of chips in each of the three size categories, and (3) relate the total amount of each material in each of these categories to the total amount of the material in the Sheep Rock collection. These figures are ordered by the row headings % TOTAL, % S/M/L, and % (Material), respectively.

Table 4

QUANTITATIVE CHARACTERISTICS OF DEBITAGE BY MATERIAL

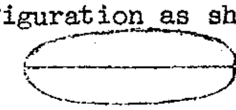
| | S | M | L | TOTAL |
|---|---|---|---|---|
| FLINT/CHERT | S | M | L | TOTAL |
| N | 1067 | 164 | 23 | 1254 |
| % F/C | 85.1 | 13.1 | 1.8 | |
| % S/M/L | 44.8 | 39.1 | 22.1 | |
| % TOTAL | 36.7 | 5.6 | 0.8 | 43.2 |
| CHALCEDONY | S | M | L | TOTAL |
| N | 861 | 60 | 3 | 924 |
| % CHAL | 93.2 | 6.5 | 0.3 | |
| % S/M/L | 36.1 | 14.3 | 3.8 | |
| % TOTAL | 29.6 | 2.1 | 0.1 | 31.8 |
| JASPER | S | M | L | TOTAL |
| N | 308 | 65 | 25 | 398 |
| % J | 77.4 | 16.3 | 6.3 | |
| % S/M/L | 12.9 | 15.5 | 24.0 | |
| % TOTAL | 10.6 | 2.2 | 0.9 | 13.7 |
| RHYOLITE | S | M | L | TOTAL |
| N | 84 | 85 | 36 | 205 |
| % R | 41.0 | 41.5 | 27.5 | |
| % S/M/L | 3.5 | 20.3 | 34.6 | |
| % TOTAL | 2.9 | 2.9 | 1.2 | 7.0 |
| LIMESTONE | S | M | L | TOTAL |
| N | 7 | 5 | 1 | 13 |
| % L | 53.8 | 38.5 | 7.7 | |
| % S/M/L | 0.3 | 1.2 | 1.0 | |
| % TOTAL | 0.2 | 0.2 | <0.1 | 0.4 |
| SILTSTONE | S | M | L | TOTAL |
| N | 15 | 22 | 9 | 46 |
| % S | 32.6 | 47.8 | 19.6 | |
| % S/M/L | 0.6 | 5.2 | 8.6 | |
| % TOTAL | 0.5 | 0.8 | 0.3 | 1.6 |
| SHALE | S | M | L | TOTAL |
| N | 27 | 9 | 7 | 43 |
| % SH | 62.8 | 20.9 | 16.3 | |
| % S/M/L | 1.1 | 2.2 | 5.8 | |
| % TOTAL | 0.9 | 0.3 | 0.2 | 1.4 |
| QUARTZ | S | M | L | TOTAL |
| N | 14 | 9 | 1 | 24 |
| % Q | 58.3 | 37.5 | 4.2 | |
| % S/M/L | 0.7 | 2.2 | 1.0 | |
| % TOTAL | 0.5 | 0.4 | <0.1 | 0.9 |
| TOTAL | 2383 | 419 | 105 | 2907 |
| % TOTAL | 82.0 | 14.4 | 3.6 | |

## CELTS, AXES, ADZES, CHOPPERS, POUNDERS

A variety of related forms have been typologically classified into five functional categories: (1) celt, (2) axe, (3) adze, (4) chopper, and (5) pounder on the basis of geometric and use properties.

<u>Type A</u>. Celt (Fig. 19a)

The two specimens of this type, one fragmentary and the other complete, are both ground smooth over almost all of their surfaces. In profile they tend to be truncated-ovate, with a rounded head opposing a bifacially beveled slightly subconvex bit. The longitudinal cross-section is plano-convex, with one terminal end curving inward on both faces to form the bit and the other continuously curving to form the head. A transverse view from the bit end yields a symmetrically oval configuration as shown below.



The fragmentary specimen is asymmetrical in profile and highly polished. The bit end is lacking and the true configuration of the artifact is unknown. The specimen may have served as a rubbing and polishing stone.

<u>Type B</u>. Celt (Fig. 19b)

The single specimen of this type is similar to Type A described above but is asymmetrically rectangular in transverse cross-section, thinner, and is made of shale instead of flint. The longitudinal section is biplano, and the transverse section rectangular, with the two faces converging at one end to form a symmetrical bit; configuration of the other end is unknown, since the specimen is fragmentary. Only the bit is polished. Another object (Fig. 29<u>d</u>), the function of which is uncertain, is also made of shale and is rectangular in transverse section. In profile, however, the artifact is irregular, with asymmetrically positioned displaced scored concavities giving it a drawn-out S-like configuration. The bit end contracts somewhat, and both faces are smoothed and merge in a continuously rounded edge which is scored at right angles to the direction of the bit.

<u>Type C.</u> Celt (Fig. 20a)

Specimens of this type are either lobate or oval in outline and are broadly percussion-flaked along the lateral edges of both faces either partially or in their entirety. Bits are rounded and bifacially beveled and are generally not ground. One example retains a striking platform at the opposite end of the bit, a single face of which has been abraded. In longitudinal cross-section the type is either symmetrically or asymmetrically biconvex and in transverse section (viewed from the bit end) asymmetrically biconvex. All specimens are large in size, roughly prepared, were probably hafted and probably served as celts.

Type D. Celt (Fig. 19c)

This celt-like fragment is relatively thick and is lobate in configuration. Longitudinal cross-section is biterminally-asymmetrical biconvex and transverse section symmetrically biconvex. The bit end converges to a smoothed edge and both faces have been extensively abraded. The remnants of massive flake scars may be observed on practically all surfaces and originate from many directions. It is stratigraphically the lowest shaped artifact yet recovered from the site, having been found in level 10.

Type E. Celt (Fig. 19d)

This specimen is a crude Quartzite celt-like object which shows heavy use along the edge of the bit. It is basically truncated-ovate in outline, asymmetrically biconvex in longitudinal cross-section and asymmetrically rectangular in transverse section (viewed from the bit end). The specimen is unground and unretouched.

Type F. Celt (Fig. 19e)

This chipped and ground celt is truncated-excurvate in outline and asymmetrically biconvex in longitudinal and transverse cross-section. Bold percussion-flaking characterizes most of the surface of both faces, and grinding is found only in the bit area where the two faces converge to a bifacially-beveled sharp edge.

Type G. Axe (Fig. 21)

A truncated-ovate outline and a plano-convex longitudinal and transverse cross-section characterize the general form of this specimen. Near the truncated end a chipped groove transverses the entire width of one face. The opposite face is largely unworked, with only the lateral edges receiving rough percussion flaking. The bit end is convex in contour and somewhat blunted. The piece is functionally classified as an axe.

Type H. Axe (Fig. 20b)

This type is similar to Type G but lacks the groove and is smaller. The bit end is more convex, as is the opposing end. In longitudinal and transverse cross-section the specimen is asymmetrically biconvex. Both faces are characterized by bold percussion-flaking, but one less so than the other. The object is functionally classifed as an axe.

Type I. Adze or Gouge (Fig. 22a)

This type is elongate-ovate in outline, plano-convex in longitudinal cross-section and asymmetrically triangulo-biconvex in transverse section. One face converges on the other to form a subconvex unground bit. This plano-beveled configuration suggests utilization as a gouge or adze. Both faces are roughly percussion-flaked and are smoothed over, possibly through use. An asymmetrically positioned ridge runs 3/4 the length of the beveled face.

Type J. Chopper (Fig. 23)

This specimen is relatively large and thin, with incurvate sides which expand toward the bit end. In longitudinal and transverse cross-section the piece is biplano. Only the lateral edges of the sides and subconvex bit are retouched with very rough percussion-flaking. The object probably served as a chopper.

Type K. Pounders (Fig. 24, 25)

These are large oblong stone artifacts one end of which is broader and more blunted than the other. One is asymmetrically biconvex in longitudinal and transverse cross-section. The other is biplano in longitudinal section and rectangular in transverse cross-section. This latter specimen is grooved on both sides above the mid-section. The broad blunted ends on both objects and the notches on one of them suggest use as hafted pounders.

## NET SINKERS

Type A (Unillustrated)

Pebble Net Sinkers. These are rounded river pebbles which are relatively thin and ovate in cross-section. They may or may not be notched and, except for this feature, are not shaped in any manner.

Type B (Fig. 22c)

Notched and Peripherally Chipped Disk Net Sinkers. This type is relatively thin in cross-section and is shaped only along the periphery.

Type C (Unillustrated)

Unnotched and Peripherally Chipped Disk Net Sinkers. These are similar to Type B above but lack opposed notches.

Type D (Fig. 29c)

Notched and Peripherally Smoothed Disk Net Sinkers. Similar to Type B above, these are peripherally smoothed instead of chipped.

Type E (Fig. 22b)

Steatite Net Sinkers. These are small biterminally grooved rectangular objects. Both the longitudinal and transverse cross-sections tend to be biplano.

## GROUND STONES

Type A (Fig. 26a)

Combination Grinding Stone and Pounder. This specimen is more or less round in outline and cylindrical in cross-section with convex ends. Both working surfaces are ground smooth and the centers of these are pitted. The sides of the stone are rough and appear to have been used for pounding.

Type B (Fig. 27)

Milling Stone. This specimen is cylindrical in form and is split longitudinally. The surface appears to originally have been pitted, but subsequent use produced a well-ground surface over most of the tool.

Type C (Fig. 29c)

Mashing Stones. These are river pebbles of various shapes and sizes which have been pitted over the central part of a convex surface and used for mashing and grinding.

## ABRADED STONES

Abraded Stones (Fig. 28a,b)

A number of stones of variable form and size show evidence of abrasive action, some for sharpening and others for polishing purposes.

## HAMMER STONES

### Hammer Stones (Fig. 29b)

Time has permitted no more than a rudimentary sorting of these tools. It can only be stated that stones showing diagnostic battered surfaces are to be found in the collection, but stipulation of distribution and variety must await more intensive analysis.

## MICA

Three fragments of biotite mica have been excavated from the site. All were found in level 2.

## GORGET

### Gorget (Fig. 28d)

Only a single fragment of a tabular gorget has been recovered from the site; its condition, however, does not permit reconstruction of the original form.

## RED OCHRE

A lump of hematite in which two parallel grooves have been cut through use was excavated from level 3.

## QUARTZ CRYSTALS

### Quartz Crystals (Fig. 28e,f, g)

These are multifaceted clear and translucent quartz crystals of more or less uniform geometrical configuration.

# DISCUSSION

This discussion presents a brief summary-characterization of the tool-bearing master levels of the site as well as some observations concerning the stratigraphic integrity and relationships between contiguous and non-contiguous units. The section is concluded with a few suggestions relating to further analysis of the lithic assemblage.

The trial master stratigraphic units may be conveniently viewed in terms of three major temporally delimited categories: (1) Pre-Late Archaic levels, (2) Late Archaic to Early Woodland levels, and (3) Post-Early Woodland levels. Each of these categories, as well as the levels contained within them, is discussed in terms of the criteria set forth above. Stratigraphic distribution of all tool types is presented in Tables 7 and 8. Diagrams 2 and 3 define the lensing pattern of the projectile points and knives, respectively.

On the basis of the distribution of the various projectile point forms it appears that those levels which predate the Late Archaic are relatively well-differentiated in terms of both artifact yield and distribution. Conclusive evaluation of these components is not forthcoming at this time, however, since very little of the earliest deposited levels have been excavated and pre-Late Archaic utilization of the site was probably never as intensive as in later times, both factors resulting in low artifact yield and less diversity compared to overlying levels. Characterization of these units, therefore, can go little beyond a simple listing of what was found and a statement of affinities suggested by similarities in projectile point styles.

Category (1) consists of levels 11 through 6. The lowest of these, levels 11 and 10, produced only two implements, a utilized flake scraper and a lobate celt with a convex bit (Type D), respectively. Level 9 commences the projectile point sequence with Type 1, which is equated with the Kirk Corner-Notched point (Coe 1964), though the convex basal configuration of the Sheep Rock specimens diverges considerably from the generally straight-based Kirk form. Coe estimates this style to date between 6000 and 5000 B.C. in the North Carolina Piedmont. Betty Broyles has recently radiocarbon dated a Kirk complex at the St. Alban's site in West Virginia to 6980±160 years (personal communication: 5 May 67). The earliest identifiable occupation at Sheep Rock thus dates from the Early Archaic. Also found in Level 9 are a quartzite celt (Type E) and an small, ovate, serrated knife (Type F).

Levels 8 and 7 do not appear at the present time to differentiate distinct typological materials, as members of projectile point Types 3, 4, and 5 occur in both levels. Of the early forms which are represented by more than one specimen, only Type 2 is restricted to level 8. In these compoents influence is seen to come from the North as well as the South. Temporally, they date to the Middle Archaic. Projectile point Types 3 and 5 are classified with early Laurentian, and Type 4 is equated with the Halifaz point (Coe 1964). Type 2 is probably related to an as yet unnamed and undefined point type of eastern Pennsylvania which Barry Kent believes to date from the Middle Archaic (personal communication:29 April 67). The bifurcated-base point (Type 7) is at this time something of an anomaly, since similar forms date to the Middle Archaic at the Rohr rock shelter (Dragoo 1956), which correlates well with the type's stratigraphic provenience at Sheep Rock, and to the Early Archaic at the St. Alban's site (Broyles:personal communication). Both of these sites are located in West Virginia.

Other tool forms characterizing these two levels are prismatic and thick side scrapers (Types B and C), a flat-backed, beveled end scraper (Type D), small ovate and convex trapezoidal knives (Types F and G), double platform triangular and biplanar cores, and a core residue.

Though the north-south profiles constructed by Horn indicate the presence of occupation zones in level 6, only one artifact, an abraded stone probably derived from level 5, can be assigned to this level. A carbon sample from one of these zones yielded a date of 1850 B.C. ± 180 years, which seems too late in any case. For the time being, level 6 is considered to be a sterile layer, and resoltuion of its nature must await a re-evaluation of the stratigraphy which is to take place this summer.

Level 6 effectively separates the Middle and Late Archaic components of the site and category (2), which consists of levels 5, 4, and 3, from category (1). Cultural affinity in level 5 is overwhelmingly with the Northeast. The component is characterized by a variety of stemmed and corner and side-notched projectile points related to similar forms found in Brewerton (Types 9, 10, 11, 12, and 14), Lamoka (Type 22B) and Rossville (Type 17) components in New York and an Early Boreal Archaic component in Maine (Type 19), all of which manifestations are centered to the north and collectively date between 2500 and 2000 B.C. Additional affinities are with the Late Archaic "Helgramite" (Type 13) and Bare Island (Type 18) points of eastern Pennsylvania. Type 13 actually seems to represent a mixture of attributes of both the "Helgramite" points and the Normanskill points of eastern New York, both dating to the terminal Late Archaic. Further confirmation of the temporal horizon of level 5 comes from a radiocarbon date (M-1906) of 2350 B.C.±180 years derived from a charcoal sample extracted from the lower part of the level.

Also found in this unit are two intrusive varieties of Susquehanna Broad Spear points (Types 20 and 21) which date to the Transitional period. Other tool forms characterizing the level, the cultural affinities of which have not been investigated, include asymmetrical leaf-shaped and utilized crescent flake knives, single platform triangular and biplanar tabular cores, large lobate or oval, marginally percussion-flaked celts (Type C), an axe (Type H), intrusive steatite net sinkers, thick side scrapers, notched end scrapers prepared from broken projectile points, and two strike-a-lights.

Level 4 is characterized by a variety of projectile point forms deriving from Late Archaic through Middle Woodland components. Representatives of the Bare Island (Type 18), Brewerton (Type 23), and Genesee (Type 24) complexes, diagnostic of the terminal Late Archaic, two variants of the Susquehanna Broad Spear (Types 21 and 25), definitive of the Transitional period, Early Woodland Meadowood points (Type 26), and the Raccoon Side-Notched point, provisionally assigned to the Middle Woodland period, are all found in this stratum.

Other materials excavated from level 4, such as utilized flake scrapers, asymmetrical leaf-shaped (Type D) and roughly percussion-flaked (Type H) knives, biplanar tabular cores, core residues, and notched pebble net sinkers, seem to represent a collection of artifacts drawn from and diagnostic of more than one period.

The projectile points found in level 3 also characterize a number of chronological periods ranging from Late Archaic to Early Woodland. These include Brewerton Corner-Notched (Type 8), Rossville (Type 17), and "Helgramite" (Type 13) points dating from the Late Archaic; three variants of the Susquehanna Broad Spear (Types 21, 25, and 28) diagnostic of the Transitional; Meadowood (Type 25) and Juniata Stemmed (Type 29) points distinctive of the Early Woodland; Perkiomen (Type 30) points which may be a function of either the Transitional or Early Woodland occupation; and Raccoon Side-Notched (Type 27) and Snyder-like (Type 31) points dating to the Middle Woodland period. In addition, four types of triangular points (Types 37, 38, 39, and 41), dating from Late Woodland to Historic and deriving from Owasco, Shenk's Ferry and Susquehannock occupations, are found in this stratum.

Level 3 is also characterized by a large variety of other tool forms and is surpassed in both quantity and variety only by level 2. Excavated from level 3 are large asymmetrical leaf-shaped and crescent-shaped knives, triangular blades, and lanceolate cutting implements of several typological classes. Cylindrical and concave-based triangular drills, a variety of cores, core residues, celts, axes, several types of discoidal net sinkers, prismatic side scrapers, ground stones, and red ochre are also found in this level.

The picture of chronological diversity presented by the components of Category (2), particularly levels 4 and 3, suggests that considerable mixing has occurred between them. Table 5 presents a summary of this diversity by period, numbers of tool classes and numbers of implements. A model characterizing the nature of the relations between these strata and of the modes of utilization of the site from Late Archaic to Early Woodland times is presented below.

The key to understanding the nature of the interaction of levels 5, 4, and 3 lies in defining the provenience of Transitional occupation both vertically and horizontally. In evaluating the relationships within and between these levels diagnostic tool types were classified according to three chronologic periods, Late Archaic, Transitional, and Early Woodland or Later, and their stratigraphic distribution was determined. Particular attention was focused on such diagnostic Transitional materials as Susquehanna Broad Spear points, steatite and pebble net sinkers, and steatite pot fragments. The following observations are made:

1. Diagnostic Late Archaic artifacts are found in level 3 only where levels 5 and 3 are contiguous. Where level 4 is interposed between levels 3 and 5 these artifacts are found only in levels 5 and 4.

2. Diagnostic Early Woodland or Later artifacts are found in level 5 only where levels 5 and 3 are contiguous. Where level 4 is interposed between levels 5 and 3 these artifacts are found only in levels 4 and 3.

3. Diagnostic Transitional artifacts are found in levels 3 or 5 only where these levels are contiguous. Where level 4 is interposed between levels 5 and 3 these artifacts are found only in levels 4 and 3.

4. Transitional tool classes and implements are evenly distributed through levels 3, 4, and 5, and their representation is always subordinate to at least one of the two other periods in all three levels (see Table 5).

5. In level 3, Early Woodland or Later is the most heavily represented of the periods. It ranks evenly with the Transitional in level 4 where both are subordinate to Late Archaic representation.

Table 5

PERIOD CHARACTERIZATION OF LEVELS 5, 4 AND 3

| Level | Period | No. of Typological Tool Classes | No. of Implements |
|---|---|---|---|
| | Early Woodland or Later | 1 | 1 |
| 5 | Transitional | 3 | 4 |
| | Late Archaic | 20 | 39 |
| | Early Woodland or Later | 4 | 6 |
| 4 | Transitional | 4 | 5 |
| | Late Archaic | 10 | 12 |
| | Early Woodland or Later | 21 | 44 |
| 3 | Transitional | 3 | 3 |
| | Late Archaic | 3 | 3 |

6. Late Archaic is the most heavily represented of the three periods in levels 5 and 4 and is the least represented in level 3.

7. The Late Archaic period is more heavily represented in levels above diagnostic Late Archaic occupation than is the Early Woodland or Later period in levels below diagnostic Early Woodland or later occupation.

Table 6 presents a summary of the distribution of steatite vessel fragments and other diagnostic Transitional artifacts. Seventy percent of all steatite fragments were found in level 3, 16 percent in level 5, and not more than 6 percent in level 4. Steatite fragments are found in level 5 only where levels 3 and 5 are contiguous. They are never found in level 5 where level 4 is interposed between levels 3 and 5.

The horizontal distribution of these fragments is shown in Diagram 1. Their heaviest concentration occurs in the area bounded by the coordinates W25-N5, W25-S5, W5-S5, and W5-N5. All but three fragments are situated west of the 0 east-west base-line.

These observations suggest that:

1. Transitional artifacts of what ever kind are vertically a function of level 3, particularly of the lower part of this level;

2. Horizontally, Transitional utilization of the site is restricted to a relatively small area on the west end of the site in level 3;

3. Transitional occupation was light and of short duration compared to that before and after this period;

4. Level 4 is not an occupation level but in fact a sterile buffer between levels 3 and 5;

5. There has been a greater movement of Late Archaic than Early Woodland or Later materials into level 4, indicating greater vertical displacement during the time period represented by these three levels.

Thus period Category (2) consists of two major phases, an earlier intensive-extensive Late Archaic occupation and a later multi-component phase, consisting initially of a light, spatially restricted Transitional occupation followed by another extensive-intensive utilization of the site during Early and Middle Woodland times. The Late Woodland to Historic materials found in level 3 are undoubtedly intrusive and came to be there as a result of the digging of pits

Table 6

# TRADITIONAL PERIOD ARTIFACT DISTRIBUTION

## Steatite Vessel Fragments

| Pit | N | Level |
|---|---|---|
| W40-S15 | 6 | 3 |
| W35-N5 | 3 | 3 |
| W30- 0 | 8 | 3 |
| W30-S5 | 1 | 3 |
| W25- 0 | 3 | 3 |
| W25-S25 | 2 | 3 |
| W20- 0 | 8 | 4 (3 or 5)<br>4 (3) |
| W20-S5 | 12 | 3 |
| W20-S10 | 2 | 4 |
| W15- 0 | 1 | 5 |
| W15-S5 | 10 | 5 |
| W15-S10 | 1 | 3 or 4 |
| W10- 0 | 8 | 3 |
| W10-S5 | 1 | 3 |
| W10-S5 | 1 | 3 |
| W5-N5 | 1 | ? |
| W5-S5 | 1 | ? |
| W5-S10 | 1 | 3 or 4 |
| Total | 48 | 3 |
| | 2 | 4 |
| | 11 | 5 |
| | 2 | ? |
| | 2 | 3 or 4 |
| | 4 | 3 or 5 |

## Other Transitional Artifacts

| Pit | N | Level |
|---|---|---|
| W40-S15 | 1 | 3 |
| W25-S5 | 1 | 5 |
| W20- 0 | 3 | 5 |
| W20-S5 | 3 | 3 |
| W20-S10 | 1 | 4 |
| W10-S10 | 1 | 3 |
| 0- 0 | 1 | 4 |
| E10-S10 | 1 | 4 |
| E35-S10 | 1 | 4 |
| Total | 5 | 3 |
| | 4 | 4 |
| | 4 | 5 |

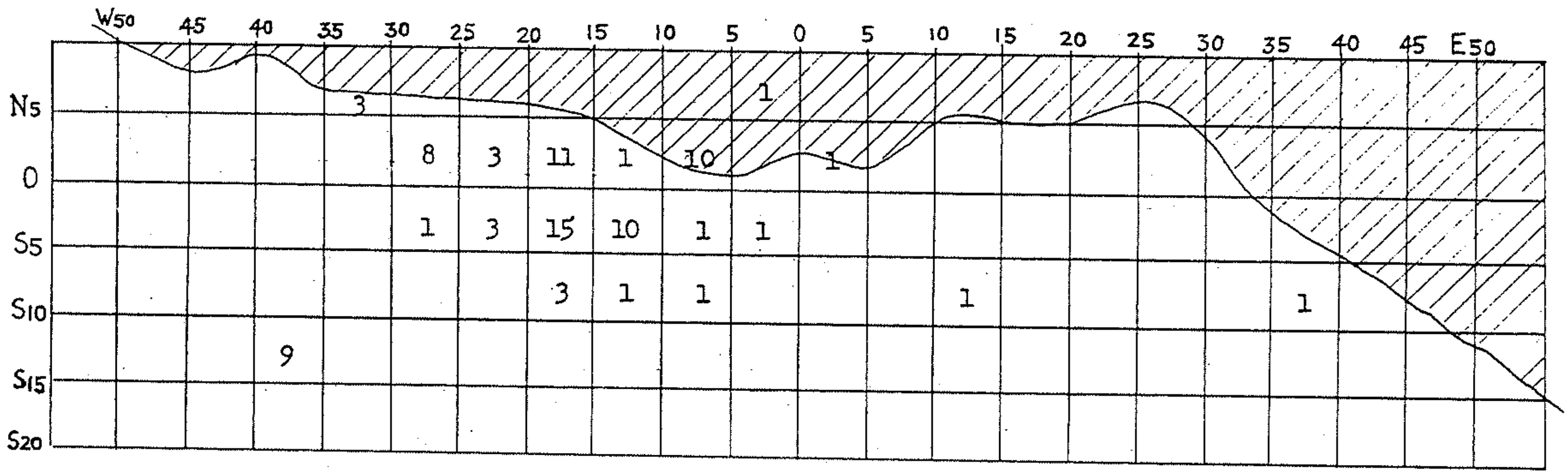



Diagram 1

DISTRIBUTION OF NUMBERS OF STEATITE POT FRAGMENTS BY PIT by peoples of these later periods. Throughout this sequence affinity is maintained most strongly to the east and north.

Category (3) consists of master levels 2 and 1. The former is characterized by a variety of stemmed, side-notched and triangular projectile points. All triangular types reach maximum frequency in this stratum. Unique to level 2 is the Sheep Rock Triangular point (Type 40). No less than eleven knife types, nine of which appear for the first time, are found in level 2. These include a utilized lobate flake knife (Type B), small crescent flake knives (Type I), and several kinds of triangular blades (Types J, L, N, P) and lanceolate knives (Types Q, R, S, U, V). Other tools found in level 2 are straight-based triangular, T-shaped, and cylindrical drills, a variety of core materials, numerous core residues, a pounder, ground shale celt and unifacially grooved axe, discoidal net sinkers, ground stones, abrading and hammer stones, and biotite mica, which is unique to this level. The cultural affinity of these materials lies sequentially to the north, then south, and finally to the east and north as a product of Owasco, Shenk's Ferry and Susquehannock influence during Late Woodland and Historic times. Materials relating to other culture complexes known for the site from distinctive potterv types are undoubtedly included among these, but they have not been identified.

Level 1 is not in itself an occupation component but merely represents a collection of artifacts which were originally deposited in strata beneath level 1. Included in this collection are a small blade (Type M) and two lanceolate knife types (S and V), a straight-based and a side-notched drill, a pounder and a celt (Type B), two discoidal net sinkers, and a grinding stone. The only projectile points found in this level belong one each to the triangular Types 38 and 41.

Arbitrary master levels 1 and 2 so far have not proved sensitive to the culture-historical sequence known for Sheep Rock from distinctive varieties of pottery and lithic materials. The primary cause of this ambiguity probably lies in the many pits dug in the site, sometimes to substantial depths, by the Historic Susquehannocks in particular and post Archaic occupants in general. Resolution of the problems of interpretation engendered by this activity must await location and definition of these features as well as re-evaluation of the individual profiles during the coming summer's excavations at the site.

# SUMMARY

In historical perspective, cultural influence at Sheep Rock during the earliest occupational horizons is seen to derive from the south in the area of the West Virginia and North Carolina Piedmont. The relative paucity of material remains suggests light non-recurrent occupation at the site. The following Middle Archaic components diverge little from this pattern, but the material remains are more substantial. Influence is now felt from both the north and south. Overlying these strata is a sterile layer which suggests abandonment of the site for an unspecified length of time. Occupation is resumed during the Late Archaic period with a substantial increase in both the variety and number of artifacts. Major affinities are with the east and north, particularly with the Brewerton complex, and though southern influence may still persist, it has so far not been identified.

Another abandonment of unknown duration seems to follow this relatively intensive utilization of Sheep Rock. During the Transitional period the site is reoccupied by a distinctive culture which probably continues an Archaic way of life. Utilization is light, however, and is spatially restricted. More intensive occupation follows this period in Early Woodland times, during which an essentially Late Archaic posture seems to have been maintained. Following this relatively intensive period, cultural influence probably derives from several geographical centers, identification of which must await further analysis. In Late Woodland, Proto-Historic and Historic times influence successively swings from north to south, and back to the north again in the face of successive Owascoid, Shenk's Ferry and Susquehannock domination of the area. A major shift in the lithic inventory following the Late Archaic involves an explosive increase in the variety of knives, cores and many other non-projectile point tool classes. Occupational intensity after Early Woodland times is maintained at a maximum.

## Suggestions for Future Analysis

Many aspects of the Sheep Rock lithic inventory have yet to be investigated. Among these are a more intensive functional and typological analysis of the non-projectile point artifacts, characterization of these in terms of cultural affinities and material complexes, and analysis of feature associations and detritus distribution in order to isolate workshop and other functional areas within the site. The relative paucity of artifactual remains from early components as well as the minimal amount of excavation which has previously been conducted in these strata demands more intensive working of Early and Middle Archaic levels in the coming field season. The site has had a rich and varied history, and accurate reconstruction depends heavily on adequate sampling and analysis of lithic artifacts, particularly where non-lithic materials are not to be found.

| LEVEL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | No./LEVEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 5 |
| 2 | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 2 | 2 | | 1 | 2 | 1 | 1 | 1 | 12 | 10 | 13 | 4 | 9 | 57 |
| 3 | | | | | | | | 1 | | | | | 1 | | | | 1 | | | | 2 | 1 | | | 1 | 1 | 1 | 1 | 3 | 1 | 2 | | | | | | 7 | 2 | 3 | | 8 | 35 |
| 4 | | | | | | | | 2 | | | | | | | | | | 1 | 1 | | 2 | | 2 | 2 | 1 | 1 | 1 | | | | | | | | | | | | | | 1 | 14 |
| 5 | | | | | | | | 4 | 1 | 1 | 1 | 1 | 5 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | 27 |
| 6 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| 7 | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| 8 | | 2 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 |
| 9 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 153 |

Table 7

STRATIGRAPHIC DISTRIBUTION OF PROJECTILE POINTS BY TYPE

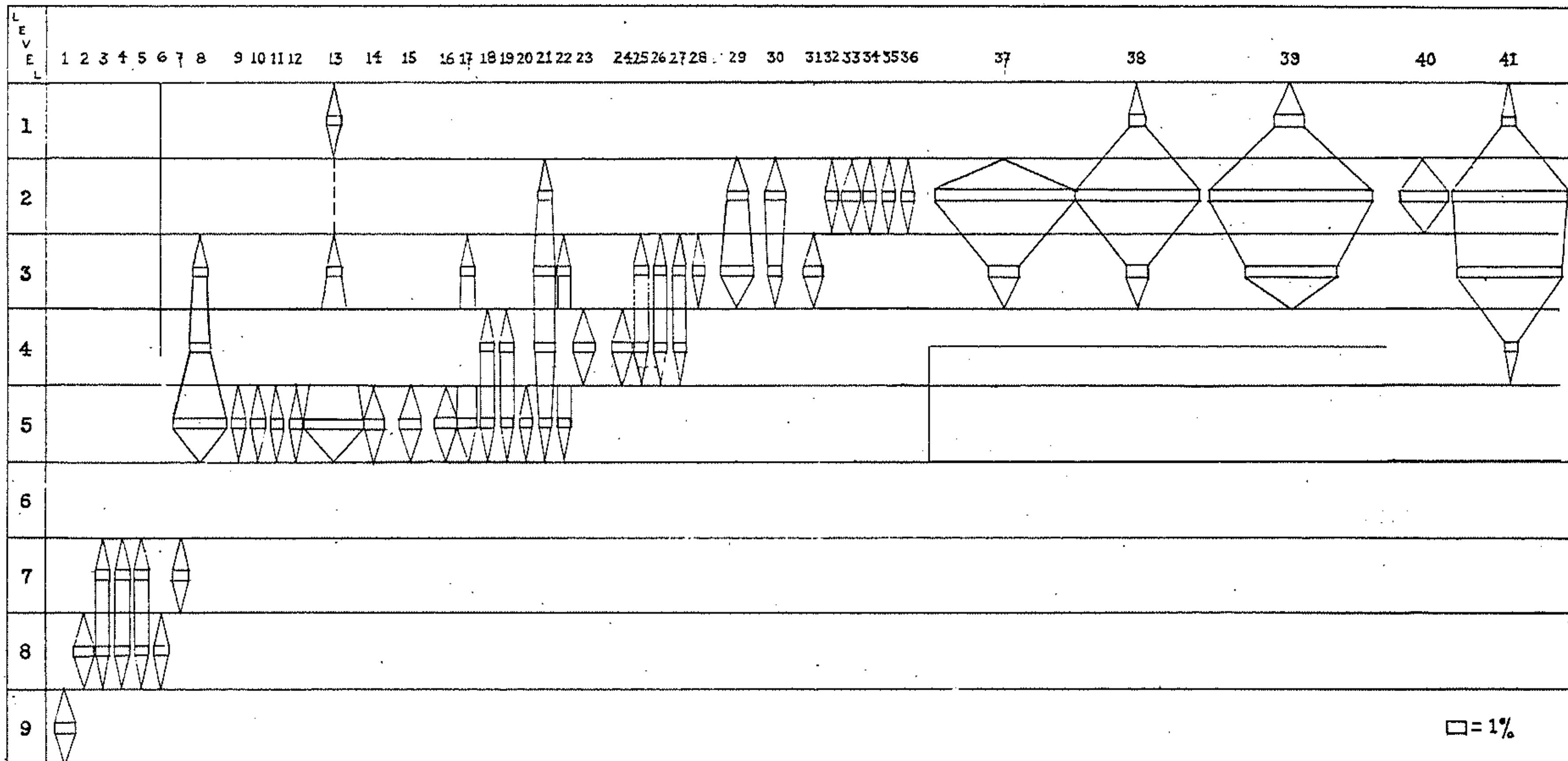



Diagram 2

LENSING PATTERN OF PROJECTILE POINTS

| LEVEL | KNIVES A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | No./LEVEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | | | | 1 | | | | | | | | | | | | | | | | | | | 1 |
| 1 | | | | | | | | | | | | | 1 | | | | | | 1 | | | 1 | 3 |
| 2 | | 1 | | | | | | | 2 | 2 | | 1 | | 3 | | 3 | 7 | 2 | 1 | | 3 | 2 | 27 |
| 3 | | | | 1 | 3 | | | 1 | | 1 | 1 | | | | 1 | | | 1 | | 3 | | | 12 |
| 4 | | | | 1 | | | | 1 | | | | | | | | | | | | | | | 2 |
| 5 | 2 | | | 3 | | | | | | | | | | | | | | | | | | | 5 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | 1 | | | | | | | | | | | | | | | | | | | | 1 |
| 8 | | | | | | 1 | 1 | | | | | | | | | | | | | | | | 2 |
| 9 | | | | | | 1 | | | | | | | | | | | | | | | | | 1 |
| 10 | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | 54 |

| LEVEL | DRILLS A | B | C | D | E | F | CORES A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | | | | | | | | | | | | | | |
| 1 | 1 | | | 1 | | | | | | | | | | |
| 2 | 4 | | 1 | | 1 | | 3 | 3 | | | 1 | 1 | 1 | 7 |
| 3 | | 1 | | | | 2 | 1 | | | | 1 | 1 | | 4 |
| 4 | | | | | | | | | | | | 1 | | 1 |
| 5 | | | | | | | | | | 2 | | 1 | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | 1 | | | 1 |
| 8 | | | | | | | | | | | | 1 | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |

| LEVEL | CELTS-AXES-POUNDERS ETC. A | B | C | D | E | F | G | H | I | J | K | NET SINKERS A | B | C | D | E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | | | | | | | | | | 1 | | | | | | |
| 1 | 2 | | | | | | | | | | 1 | | 1 | | 2 | |
| 2 | | 1 | | | | 1 | 1 | | 1 | | 1 | | 2 | 3 | 3 | |
| 3 | | | | | | | | | | | | | 1 | 1 | | |
| 4 | | | | | | | | | | | | 1 | | | | |
| 5 | | | 3 | | | | | 1 | | | | | | | | 2 |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | 1 | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |

Table 8

STRATIGRAPHIC DISTRIBUTION OF NON-PROJECTILE POINT TOOL TYPES

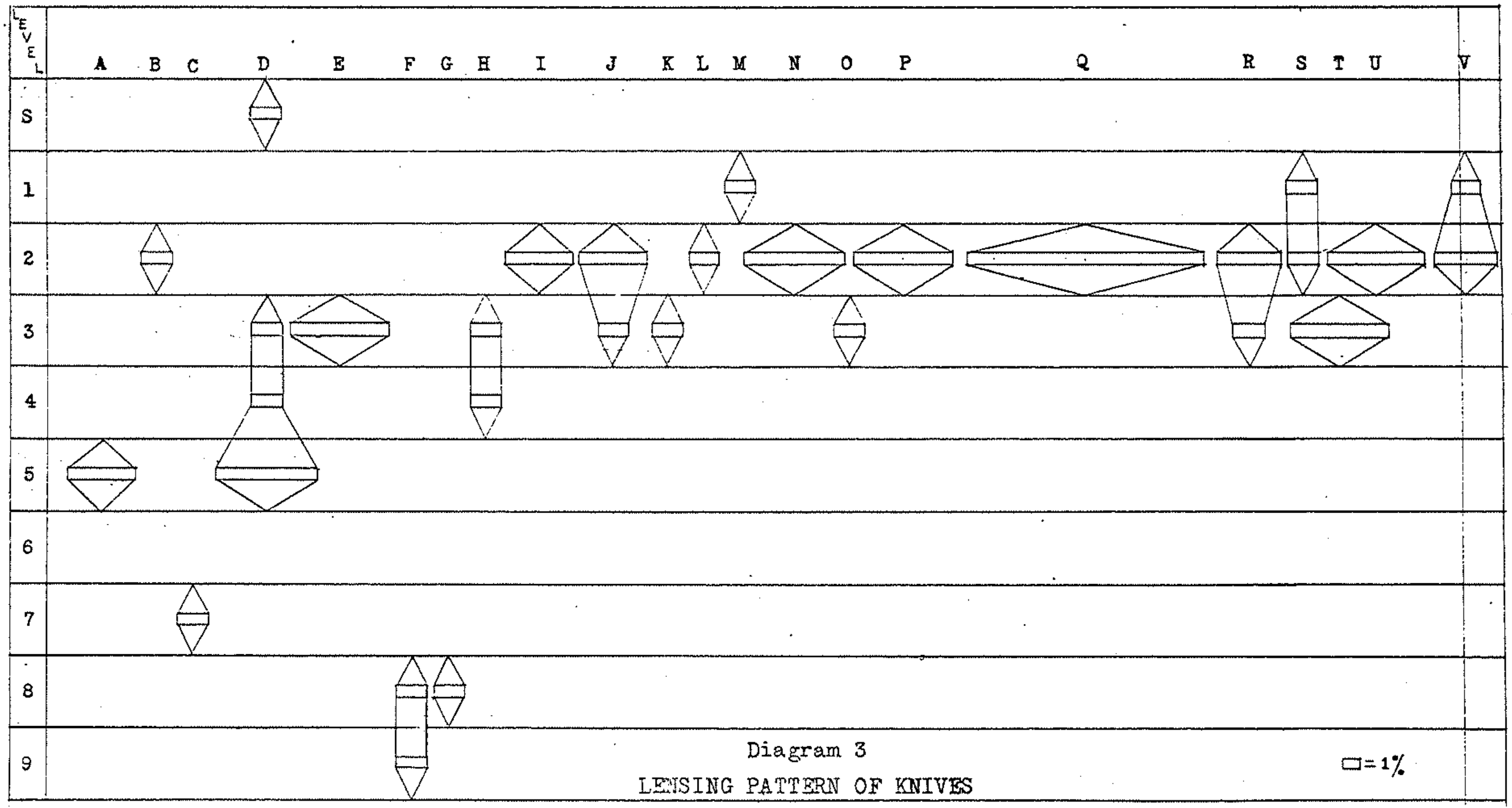



Diagram 3
LENSING PATTERN OF KNIVES

| LEVEL | SCRAPERS A | B | C | D | E | G.S. A | B | C | A | H | M | G | O | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | | | | | | | | | | | | | | |
| 1 | 1 | | | | | 1 | | | | | | | | |
| 2 | 1 | | | | | | | 2 | 3 | 3 | 3 | | | |
| 3 | | 2 | | | | | | 2 | | | | | 1 | 1 |
| 4 | 3 | | | | | | | | | | | | | |
| 5 | | | 2 | | 1 | | | | | | | | | 2 |
| 6 | | | | | | | | | 1 | | | | | |
| 7 | | | 2 | | | | | | | | | | | |
| 8 | | 1 | | 1 | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | 1 | | | | | | | | | | | | | |

G.S. Ground Stone
A Abraded Stone
H Hammer Stones
M Mica
G Gorget
O Red Ochre
S Strike-a-Light

Table 9

STRATIGRAPHIC DISTRIBUTION OF
NON-PROJECTILE POINT TOOL TYPES

Appendix A

# ATTRIBUTE LIST

The attribute list outlined below is taken with modification directly from Binford (1963). A drawing illustrating such basic point features as points of juncture and articulation, elements, subelements, and axes follows the attribute list. These features serve to define and limit morphological areas and edges and the attributes applied thereto.

Discrete Attribute List

1. Blade

1.1 Geometric attributes of the blade

1.11 Outline

1.111 Triangular

1.112 Excurvate

1.113 Incurvate

1.114 Ovate

1.115 Excurvate-incurvate

1.116 Parallel-ovate

1.117 Expanding-ovate

1.118 Contracting-ovate

1.12 Transverse section - observed at the midpoint of the blade.

1.121 Plano-convex

1.122 Plano-triangular

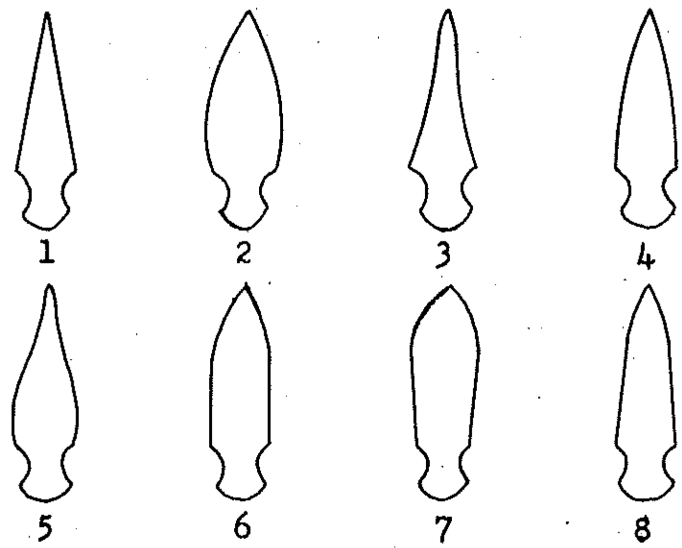
1.123 Biplano

1.24 Biconvex

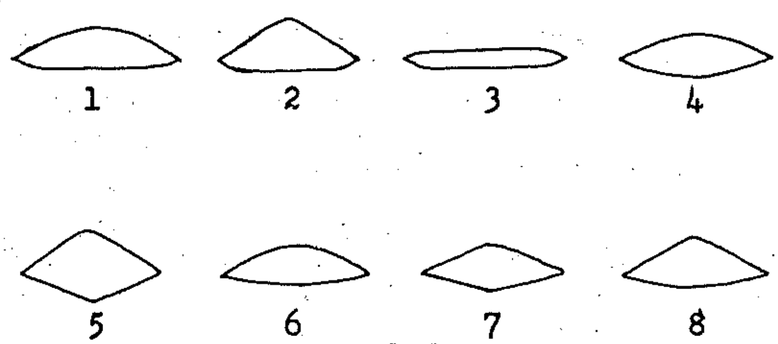
1.25 Bitriangular

1.126 Asymmetrically biconvex

1.127 Asymetrically bitriangular




BLADE OUTLINE




TRANSVERSE SECTION

1.128 Convexo-triangular

1.13 Longitudinal section of the projectile - observed on the longitudinal axis of the point oriented vertically.

1.130 Biterminally asymmetrical biconvex

1.131 Plano-convex

1.132 Biplano

1.133 Biconvex

1.134 Asymmetrically biconvex

1.135 Concavo-convex

1.136 Excurvate

1.137 Ovate or triangular

1.138 Asymmetrically ovate

1.139 Asymmetrically excurvate

1.1391 Asymmetrically concavo-convex

1.14 Symmetry of the blade

1.140 Symmetrical

1.141 Asymmetrical

1.15 Curvature of the blade - defined as the maximum perpendicular distance between the lateral edge of the blade and a straight line drawn between the distal point of juncture and the tip. The measurement is taken on both lateral edges and is given in millimeters.

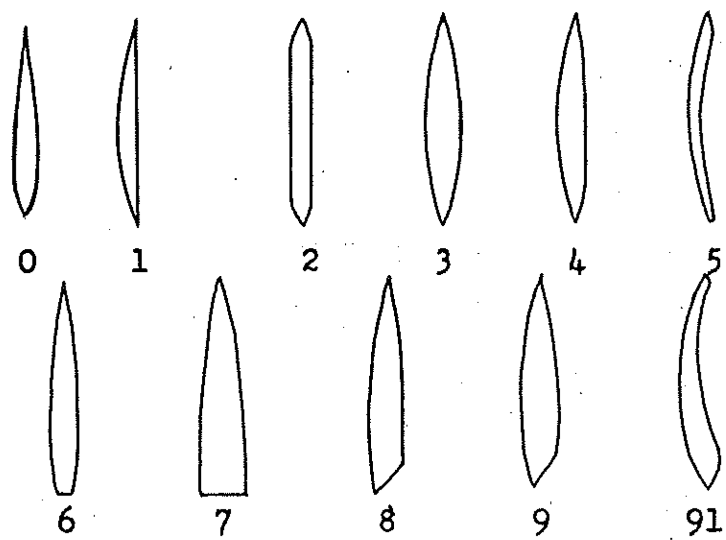
1.16 Length of the blade - defined as the distance along the longitudinal axis between a line connecting the distal points of juncture and the tip. The measurement is given in millimeters.

1.2 Technical attributes of the blade

1.21 Primary chipping (not codified)

1.22 Secondary chip scars

1.221 Type of scars (not codified)




LONGITUDINAL SECTION

1.222 Placement of scars

1.2221 Bifacial-bilateral

1.2222 Bifacial-unilateral

1.2223 Unifacial-bilateral

1.2224 Unifacial-unilateral

1.2225 Alternating faces

1.223 Pattern of occurrence of secondary scars

1.2231 Continuous

1.2232 Discontinuous

1.2233 Patterned scar clusters

1.2234 Fortuitous scar clusters

1.224 Use or tertiary flaking (not used)

1.225 Form of the lateral edge

1.2251 Serration

1.2252 Even (chipped)

1.2253 Even (ground)

1.2254 Irregular

1.226 Reworking (not used)

1.227 Presence or absence of a "hump" - defined as an irregular protrusion of the face of the point.

1.2270 Absent

1.2271 Present

2. Base element

2.1 Geometric attributes of the base

2.11 Outline (a new descriptive index incorporating Binford's definitions is given below)

2.111 Straight base

2.112 Biterminally curvate straight base

2.113 Trivectoral base

2.114 Biterminally curvate trivectoral base

2.115 Subconvex base

2.116 Biterminally curvate subconvex base

2.117 Convex base

2.118 Biterminally curvate convex base

2.119 Bivectoral base

2.1110 Biterminally curvate bivectoral base

2.1111 Subconcave base

2.1112 Biterminally curvate subconcave base

2.1113 Concave base

2.1114 Biterminally curvate concave base

2.1115 Triangulo-concave base

2.1116 Biterminally curvate triangulo-concave base

2.1117 Unnamed and unused

2.1118 Unnamed and unused

2.1119 Tivectoral subconcave base

2.1120 Biterminally curvate trivectoral subconcave base

2.1121 Medially curvate bivectoral base

2.1122 Biterminally and medially curvate bivectoral base

2.1123 Medially curvate triangulo-concave base

2.1124 Biterminally and medially curvate triangulo-concave base

2.1125 Unnamed and unused

2.1126 Biterminally right-angled straight base

2.12 Symmetry of the base (the two attributes below replace Binford's three.)

2.120 Symmetrical - a cord constructed between the defining points of the base crosses the longitudinal axis forming roughly right angles.

2.121 Asymmetrical - a cord constructed between the defining points of the base crosses the longitudinal axis forming complimentary angles which are other than approximately ninety degrees.

2.13 Curvature of the base - defined as the maximum perpendicular distance between the basal edge and the cord connecting the defining points of the base. The measurement is given in millimeters.

2.14 Width of the base - defined as the distance along the cord connecting the defining points of the base. The measurement is given in millimeters.

2.2 Technical attributes of the base

2.21 Orientation (not used)

2.22 Preparation of the base (not used)

2.23 Primary Retouch (not codified)

2.24 Secondary retouching scars

2.241 Placement of scars

2.2410 Absent

2.2412 Unifacial

2.2413 Bifacial

2.242 Pattern of occurrence

2.2420 Absent

2.2421 Continuous

2.2422 Discontinuous

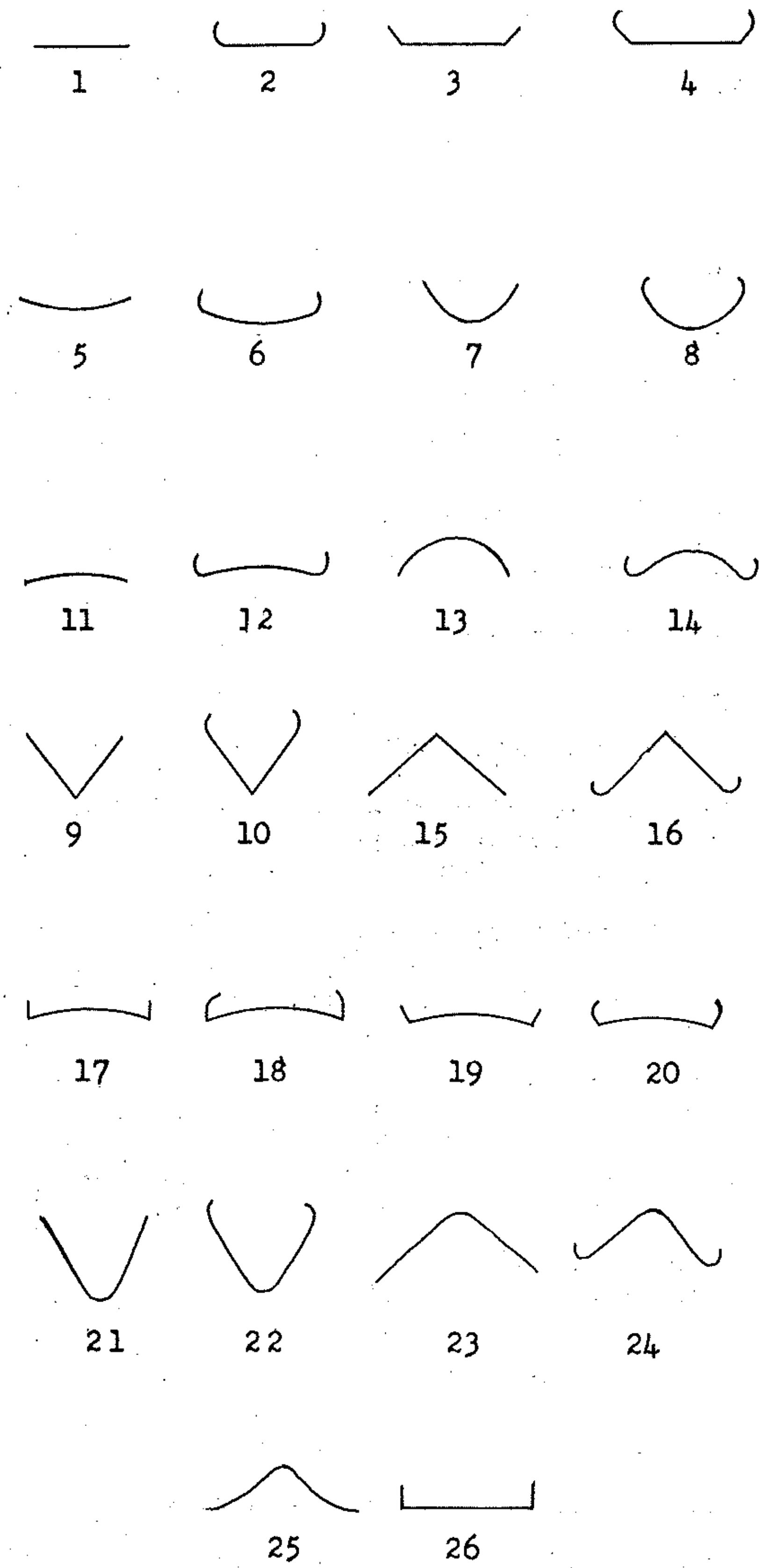
2.2423 Patterned scar clusters

2.2424 Fortuitous scar clusters

2.25 Edge form

2.251 Even (chipped)

2.252 Even (ground)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2.253 Irregular

3. Haft element

3.1 Geometrical attributes

3.12 Juncture

3.121 Lateral-lateral

3.122 Lateral-basal

3.123 Lateral-coincidental

3.124 Lateral-base defining

3.125 Coincidental

3.126 Basal-basal

3.127 Lateral-axial

3.120 Absent

3.13 Configuration of the points of juncture (not used)

3.14 Proximal-proximal width - defined as the distance along the cord connecting the proximal points of juncture. The measurement is given in millimeters.

3.15 Distal-proximal length - defined as the distance along the cord connecting the distal and proximal points of juncture on one lateral edge. If both haft elements are present the average is taken and given in millimeters.

3.16 Medial depth - defined as the maximum perpendicular distance from the lateral edge of the haft element to a cord drawn between the distal and proximal points of juncture. If both haft elements are present the average is taken and given in millimeters.

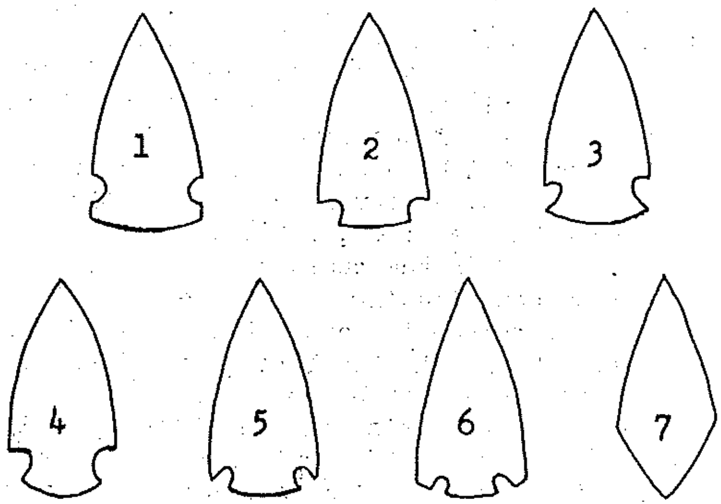
3.17 Distal-distal width - defined as the distance along a cord connecting the distal points of juncture.

3.2 Technical attributes of the haft element

3.21 Type of retouch scars (not used)

3.22 Placement of haft element scars (not used)

3.23 Edge form - Binford's category includes only presence or absence of grinding.




JUNCTURE

3.230 Absent

3.231 Even (chipped)

3.232 Even (ground)

3.233 Irregular

4. Subelements - Binford's attribute list for the description of shoulder and tang subelements is here dispensed with. In its place two attribute classes have been constructed which employ a series of ideal templates to characterize shoulder form and articulation with the blade and haft elements. These templates are constructed from two categories of lines: (1) straight, concave, and convex lines, which define the basic shape of the subelements, and (2) connector lines (points or arcs), which define the way lines of category (1) articulate with one another. Each template is composed of two lines taken from category (1) which are articulated by a connector from category (2). The principal line types may be rotated in the plane of the page within the range of, but not including, a right angle (90°), except in the cases where one or both principal lines constituting a template are oriented parallel with or perpendicular to the longitudinal axis of the point. Though the templates show lines of about equal length they need not be so. The purpose of these templates is to characterize subtle differences in shoulder and tang curvature as they define the shape of the haft element in an easily perceptable manner. A short period of experimentation demonstrated that this technique was at least as accurate as, more instructive, and easily more efficient than Binford's method which employs more than four different attribute classes to achieve the same objective.

4.21 Angle of the shoulder - the proximal angle formed at the longitudinal axis by a line drawn through the distal and distal-medial points of juncture to the longitudinal axis.

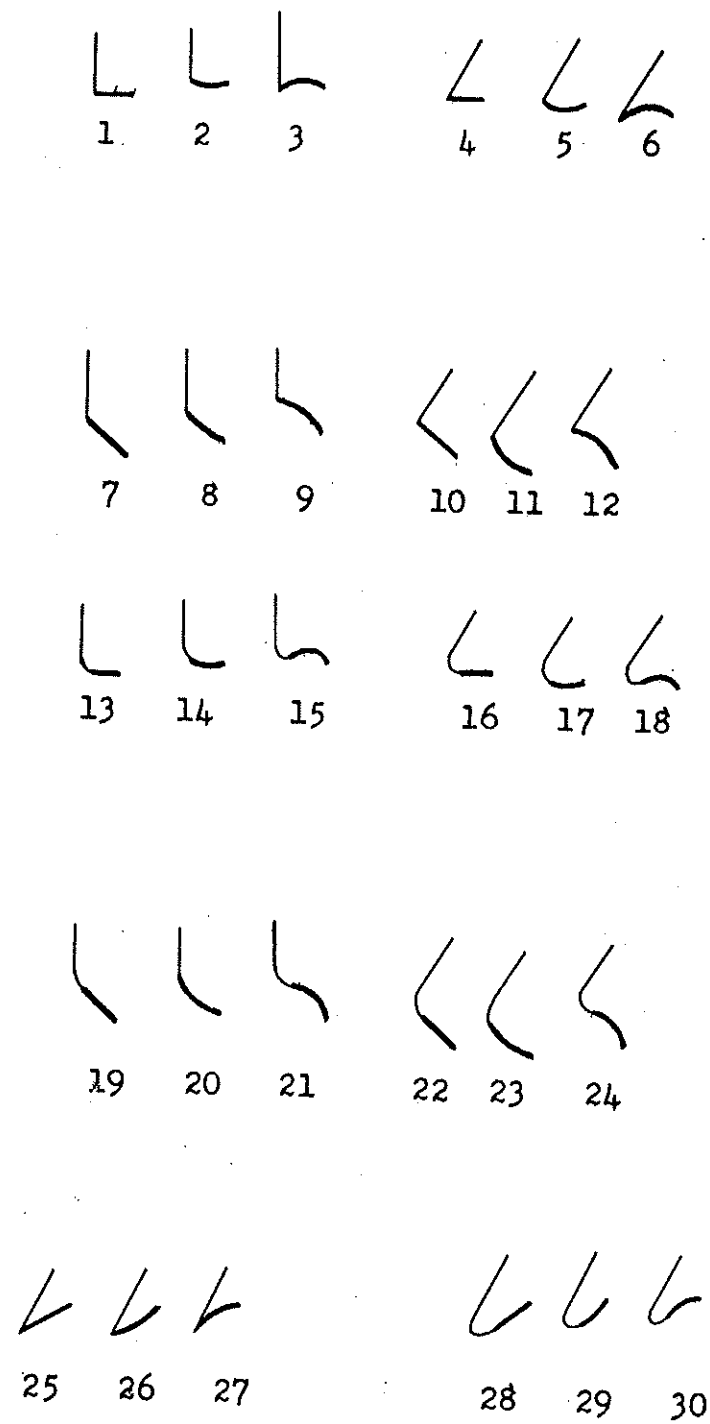
4.210 Absent - cannot be determined because the distal-medial point of juncture cannot be distinguished.

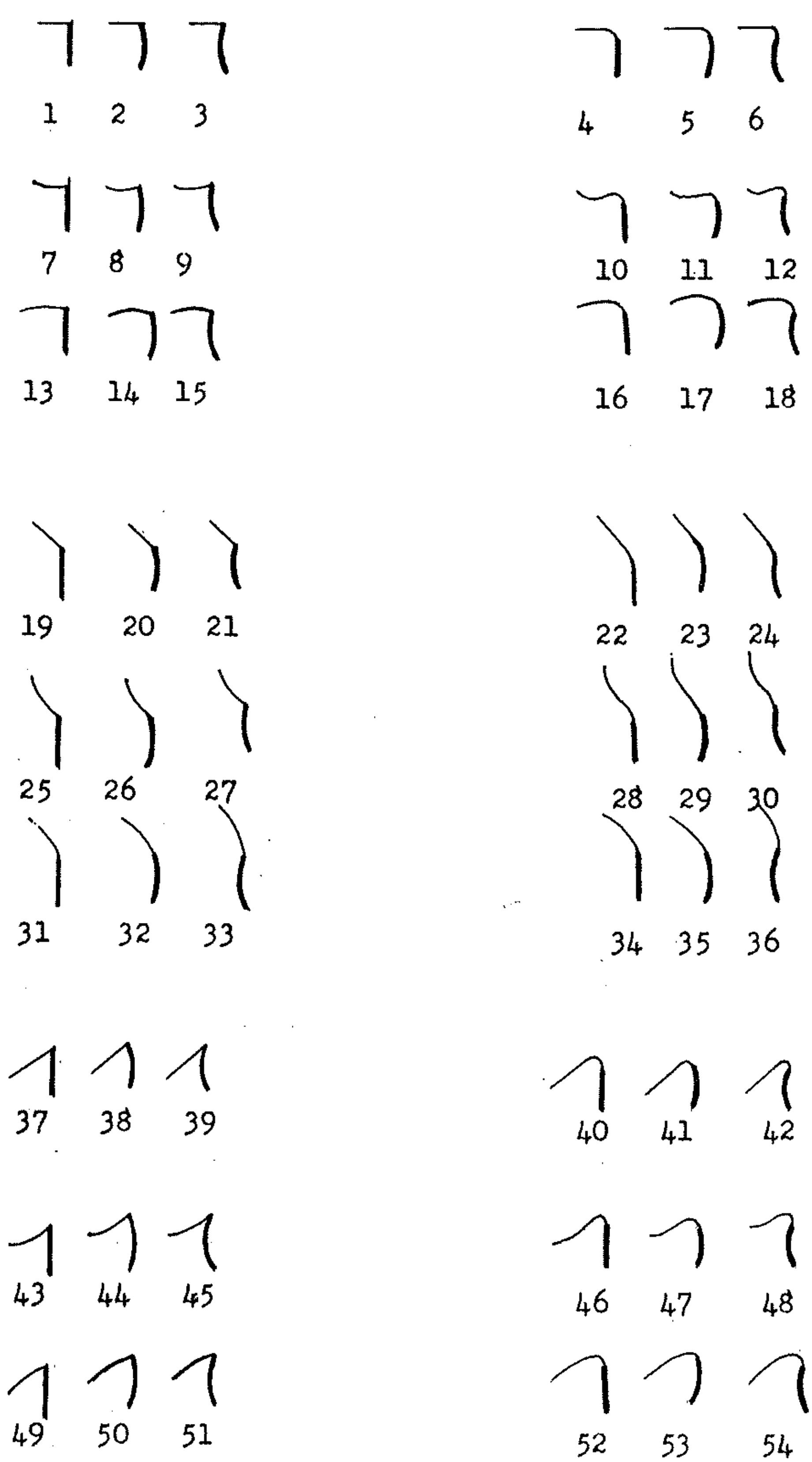
4.211 Acute

4.212 Right-angled

4.213 Obtuse

SHOULDER-BLADE SHAPE AND ARTICULATION

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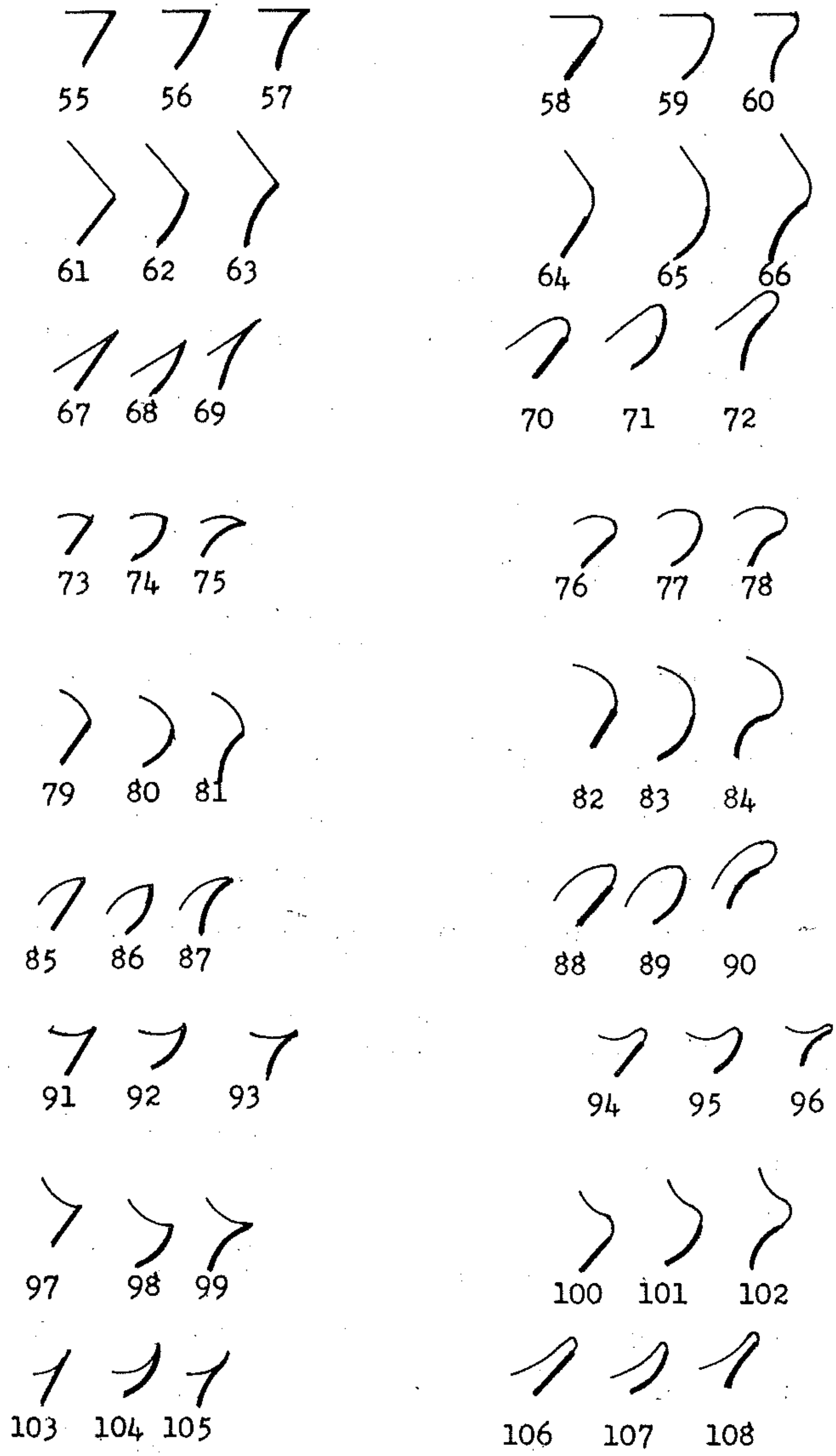
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100 101 102
103 104 105
106 107 108

4.3 Geometric form of the modified subelement of the tang (i.e., the area between the distal-medial and proximal points of juncture)

4.30 Absent - the point has no tang.

4.31 Curvate (concave)

4.32 Expanding-curvate (concave) - curves away from the longitudinal axis proximally.

4.33 Expanding - area defined by a straight line which expands away from the longitudinal axis proximally.

4.34 Parallel - area defined by a straight line which is parallel to the longitudinal axis of the point.

4.35 Contracting-incurvate (concave) - area defined by a concave line which moves progressively closer to the longitudinal axis proximally.

4.36 Contracting-excurvate - area defined by a line which curves toward the longitudinal axis convexly and proximally.

4.37 Contracting - area defined by a straight line which moves toward the longitudinal axis proximally.

4.4 Bilateral symmetry of the haft element

4.40 Absent - the point lacks a haft element.

4.41 Symmetrical - with respect to all categories: 3.1, 4.2, and 4.3.

4.42 Asymmetrical - asymmetry occurs in one or more of the categories 3.1, 4.2, and 4.3.

5. Material - the kind of stone from which the point is manufactured.

5.1 Argillite

5.2 Chalcedony - translucent; black, gray, bluish white, white.

5.3 Chert - light gray to white or creamy white; non translucent.

5.4 Flint - dark brown to black; non translucent.

5.5 Jasper - yellow, orange, red, reddish brown, non translucent.

5.6 Limestone - gives an effervescent reaction with 3N HCl.

5.7 Quartz - milky white to transparent (rock crystal).

5.8 Rhyolite

5.9 Siltstone

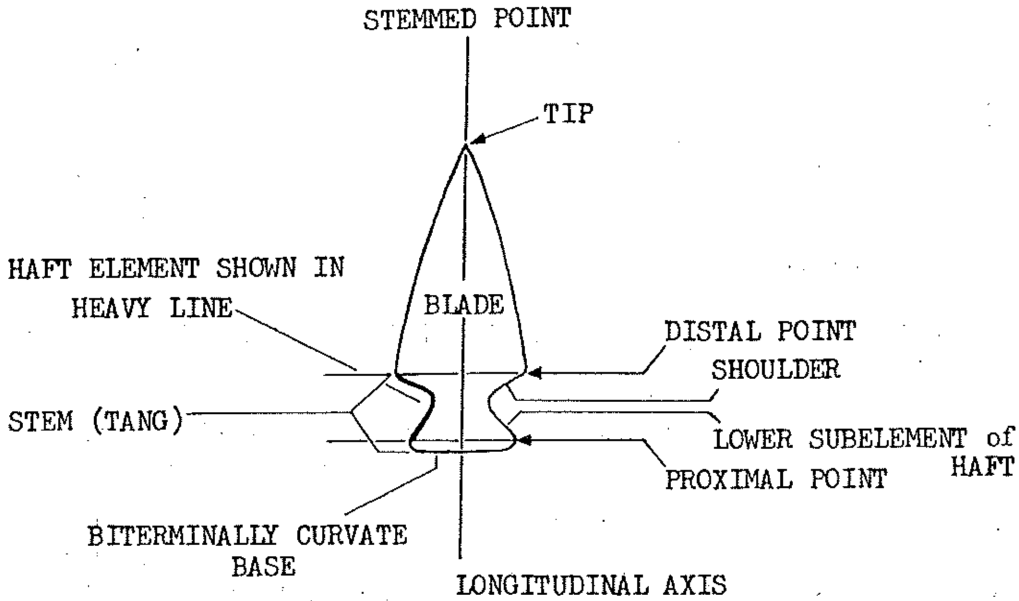
6. Dimensions

6.1 Length - the distance along the longitudinal axis from the tip to the base.

6.2 Width - the greatest distance between the lateral edges along a line perpendicular to the longitudinal axis.

6.3 Thickness - maximum thickness.

6.4 Weight - all weight measurements in this report are given to the nearest 1/10th gram. When points are incomplete, i.e., fragmentary, they may be codified in one of two ways: in either case columns 15 and 16 will both be marked 0 and column 17 marked 1 if incomplete dimensions are estimated or 0 if no attempt is made at estimation.



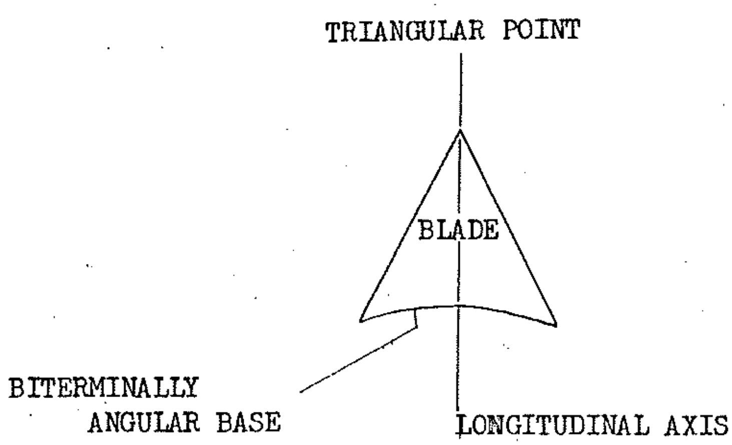




Diagram 4

BASIC POINT FEATURES

Appendix B

# POINT CODIFICATION

The table which follows this introduction presents attribute codes ordered according to a visual typological sorting for all points analyzed. Number or letter symbols, one from each attribute class defined in Appendix A, taken collectively constitute an artifact's code. Nine major structural units comprise each code: Identification, Dimensions, Provenience and Material, which treat the artifact as a whole and define its gross properties, and Blade, Base, Haft, Shoulder, and Tang, which define various elements and subelements of the artifact. Each structural unit is subdivided into one or more different attribute classes, each containing one or more discrete attributes.

The code number of non-metrical attributes constitutes the final number, or where an attribute class contains more than ten members, the final two numbers, of the outline number of the attribute. An exception is the Pit-provenience designation which includes two letter symbols designating the east-west and north-south site coordinate axes. Metrical attributes, such as length, width, thickness, curvature and weight, are given without decimal points to the nearest millimeter or 0.1 gram. Column 17 under Weight serves two functions: first, it indicates weight for all numbers 2 through 0 (in which case they correspond to tenths of a gram) and second, it indicates that the other metrical properties have been estimated (in cases where artifacts are fragmentary) when the number 1 is used. No attempt has been made to estimate weight. Two columns are devoted to defining Curvature of the Blade, one for each lateral edge.

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| Category | Field | Cols. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | PSU ACCESSION NUMBER | 01–04 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| | ARTIFACT NUMBER | 05–08 | 2402 | 1716 | 3221 | 1681 | 4927 | 1702 | 2114 | 1655 | 3926 | 0567 |
| DIMENSIONS | LENGTH mm | 09–10 | 34 | 29 | 34 | 37 | 56 | 52 | 41 | 63 | 55 | 46 |
| | WIDTH | 11–12 | 20 | 22 | 19 | 23 | 24 | 31 | 22 | 25 | 26 | 31 |
| | THICKNESS mm | 13–14 | 07 | 07 | 07 | 08 | 06 | 07 | 08 | 09 | 07 | 10 |
| | WEIGHT (EST.) gm | 15–17 | 044 | 042 | 001 | 001 | 001 | 001 | 001 | 001 | 090 | 122 |
| BLADE | OUTLINE | 18 | 9 | 9 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 |
| | CURVATURE mm | 19–20 | 33 | 33 | 21 | 21 | 33 | 54 | 43 | 33 | 73 | 35 |
| | TRANSVERSE | 21 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | LONGTUDINAL | 22 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 4 | 0 |
| | SYMMETRY | 23 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| | EDGE FORM | 24 | 4 | 2 | 4 | 4 | 4 | 0 | 4 | 4 | 1 | 1 |
| | LENGTH mm | 25–26 | 22 | 19 | 25 | 42 | 63 | 41 | 35 | 49 | 39 | 29 |
| | S. PLACEMENT | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | PATTERN | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | HUMP | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| BASE | OUTLINE | 30–31 | 02 | 02 | 12 | 12 | 02 | 02 | 12 | 05 | 05 | 07 |
| | CURVATURE | 32 | 2 | 3 | 2 | 1 | 0 | 2 | 1 | 1 | 3 | 5 |
| | SYMMETRY | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | S. PLACEMENT | 34 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | PATTERN | 35 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | EDGE FORM | 36 | 1 | 3 | 2 | 2 | 2 | 1 | 3 | 3 | 2 | 2 |
| | WIDTH | 37–38 | 17 | 19 | 19 | 20 | 16 | 19 | 11 | 12 | 22 | 26 |
| HAFT | JUNCTURE | 39 | 4 | 4 | 1 | 1 | 4 | 4 | 2 | 2 | 3 | 3 |
| | EDGE FORM | 40 | 3 | 3 | 2 | 1 | 1 | 3 | 1 | 3 | 3 | 2 |
| | DIST. - PROX. LENGTH mm | 41–42 | 10 | 08 | 07 | 08 | 00 | 09 | 17 | 15 | 09 | 11 |
| | MEDIAL DEPTH | 43 | 2 | 3 | 2 | 3 | 4 | 4 | 2 | 3 | 4 | 5 |
| | DIST. - DIST. WIDTH mm | 44–45 | 18 | 22 | 18 | 22 | 22 | 30 | 20 | 24 | 23 | 29 |
| | MED. - MED. WIDTH mm | 46–47 | 14 | 14 | 14 | 16 | 12 | 17 | 11 | 12 | 14 | 18 |
| SHOULDER | SH. - BLADE OUTLINE | 48–49 | 10 | 24 | 22 | 12 | 16 | 16 | 24 | 21 | 15 | 22 |
| | SH. - HAFT OUTLINE | 50–52 | 064 | 083 | 064 | 082 | 058 | 058 | 034 | 034 | 077 | 077 |
| | ANGLE | 53 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 1 |
| TANG | OUTLINE | 54 | 3 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 2 | 2 |
| | LENGTH mm | 55–56 | 10 | 11 | 10 | 11 | 08 | 09 | 11 | 14 | 09 | 15 |
| SYMMETRY | BILATERAL | 57 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| | MATERIAL | 58 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 |
| PROVENIENCE | PIT | 59–64 | W05S20 | W05S20 | W15S20 | W05S10 | E00S15 | W05S10 | W15S15 | W10S20 | W15S10 | W10S05 |
| | DEPTH (INCHES) | 65–67 | 100 | 115 | 120 | 108 | 122 | 108 | 120 | 123 | 135 | 136 |
| | | 68–70 | | | | 118 | 133 | 110 | 126 | 128 | 141 | 142 |
| | EXCAVATION LEVEL | 71–73 | | | | | | | | | | |
| | PROFILE LEVEL | 74–75 | | | | | | 07 | | | | 06 |
| | | 76 | H | I | I | F | I | | I | I | L | |
| | MASTER LEVEL | 77–78 | 07 | 08 | 08 | 07 | 08 | 07 | 08 | 08 | 09 | 09 |
| TYPE | TYPE | 79–80 | 05 | 05 | 04 | 04 | 03 | 03 | 02 | 02 | 01 | 01 |

| Group | Field | Columns | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | PSU ACCESSION NUMBER | 01–04 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | | | | A661 | | A661 |
| | ARTIFACT NUMBER | 05–08 | 6731 | 6718 | 6716 | 4597 | 2996 | 1742 | 1737 | 1730 | 1729 | | | | 6940 | | 2682 |
| DIMENSIONS | LENGTH mm | 09–10 | | 36 | 42 | 31 | 26 | 34 | 33 | 34 | 34 | | | | | | 43 |
| | WIDTH | 11–12 | | 26 | 26 | 23 | 22 | 20 | 24 | 22 | 21 | | | | | | 21 |
| | THICKNESS mm | 13–14 | | 07 | 08 | 07 | 06 | 07 | 06 | 07 | 04 | | | | | | 08 |
| | WEIGHT (EST.) gm | 15–17 | | 063 | 072 | 039 | 034 | 042 | 045 | 045 | 048 | | | | | | 057 |
| BLADE | OUTLINE | 18 | | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 2 | | | | | | 4 |
| | CURVATURE mm | 19–20 | | 22 | 32 | 22 | 44 | 22 | 33 | 11 | 33 | | | | | | 32 |
| | TRANSVERSE | 21 | | 6 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | | | | | | 6 |
| | LONGITUDINAL | 22 | | 0 | 0 | 0 | 4 | 4 | 4 | 0 | 3 | | | | | | 4 |
| | SYMMETRY | 23 | | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | | | | | | 1 |
| | EDGE FORM | 24 | | 1 | 1 | 4 | 2 | 2 | 2 | 2 | 2 | | | | | | 4 |
| | LENGTH mm | 25–26 | | 25 | 30 | 22 | 19 | 26 | 24 | 22 | 25 | | | | | | 33 |
| | S. PLACEMENT | 27 | | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | | | | | | 0 |
| | PATTERN | 28 | | 0 | 2 | 0 | 1 | 2 | 2 | 2 | 2 | | | | | | 0 |
| | HUMP | 29 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 1 |
| BASE | OUTLINE | 30–31 | | 02 | 02 | 02 | 05 | 02 | 02 | 06 | 02 | | | | | | 01 |
| | CURVATURE | 32 | | 3 | 3 | 0 | 2 | 2 | 3 | 3 | 2 | | | | | | 0 |
| | SYMMETRY | 33 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 1 |
| | S. PLACEMENT | 34 | | 0 | 0 | 2 | 2 | 3 | 3 | 3 | 2 | | | | | | 0 |
| | PATTERN | 35 | | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | 0 |
| | EDGE FORM | 36 | | 2 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | | | | | | 2 |
| | WIDTH | 37–38 | | 23 | 20 | 20 | 17 | 16 | 18 | 21 | 16 | | | | | | 21 |
| HAFT | JUNCTURE | 39 | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | | | | | 3 |
| | EDGE FORM | 40 | | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | | | | | | 2 |
| | DIST. – PROX. LENGTH mm | 41–42 | | 08 | 10 | 07 | 06 | 06 | 05 | 06 | 05 | | | | | | 11 |
| | MEDIAL DEPTH | 43 | | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | | | | | | 3 |
| | DIST. – DIST. WIDTH mm | 44–45 | | 25 | 26 | 23 | 21 | 19 | 24 | 21 | 17 | | | | | | 19 |
| | MED. – MED. WIDTH mm | 46–47 | | 20 | 16 | 16 | 13 | 13 | 15 | 15 | 12 | | | | | | 15 |
| SHOULDER | SH. – BLADE OUTLINE | 48–49 | | 12 | 24 | 22 | 30 | 22 | 04 | 24 | 24 | | | | | | 12 |
| | SH. – HAFT OUTLINE | 50–52 | | 082 | 083 | 064 | 088 | 064 | 059 | 066 | 101 | | | | | | 084 |
| | ANGLE | 53 | | 3 | 3 | 3 | 1 | 3 | 2 | 3 | 2 | | | | | | 3 |
| TANG | OUTLINE | 54 | | 3 | 2 | 3 | 3 | 3 | 2 | 1 | 2 | | | | | | 3 |
| | LENGTH mm | 55–56 | | 08 | 09 | 09 | 06 | 08 | 08 | 11 | 08 | | | | | | 11 |
| SYMMETRY | BILATERAL | 57 | | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | | | | | | 1 |
| | MATERIAL | 58 | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | | | | | 8 |
| PROVENIENCE | PIT | 59–64 | W15S15 | W20S05 | W20S05 | | | W35S20 | W20S10 | W20S10 | W15S05 | | | | W20S00 | | CLN UP |
| | DEPTH (INCHES) | 65–67 | 090 | 078 | 077 | | 084 | 067 | 078 | 078 | 084 | | | | 102 | | 120 |
| | | 68–70 | 096 | 084 | 085 | | | 077 | 084 | 082 | 090 | | | | 108 | | |
| | EXCAVATION LEVEL | 71–73 | | | | | | | | | | | | | | | |
| | PROFILE LEVEL | 74–75 | | | | | | 04 | | | | | | | 06 | | |
| | MASTER LEVEL | 76 | G | E | E | | | | E´ | E´ | E | | | | | | |
| | | 77–78 | 05 | 05 | 05 | | 05 | 03 | 04 | 04 | 05 | | | | 06 | | 08 |
| TYPE | TYPE | 79–80 | 08 | 08 | 08 | 08 | 08 | 08 | 08 | 08 | 06 | | | | 07 | | 06 |

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| Columns | Field | Section | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01–04 | PSU ACCESSION NUMBER | IDENTIFICATION | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| 05–08 | ARTIFACT NUMBER | | 4601 | 4598 | 4594 | 3290 | 1744 | 0492 | 0034 | 1721 | 1711 | 1724 | 4438 |
| 09–10 | LENGTH mm | DIMENSIONS | 43 | 39 | 46 | 31 | 26 | 32 | 32 | 42 | 74 | 30 | 25 |
| 11–12 | WIDTH | | 20 | 18 | 19 | 20 | 14 | 18 | 16 | 26 | 39 | 18 | 17 |
| 13–14 | THICKNESS mm | | 07 | 08 | 07 | 06 | 04 | 07 | 06 | 07 | 12 | 06 | 05 |
| 15–17 | WEIGHT (EST.) gm | | 048 | 042 | 056 | 001 | 018 | 032 | 025 | 082 | 277 | 028 | 019 |
| 18 | OUTLINE | BLADE | 4 | 4 | 4 | 4 | 1 | 1 | 4 | 4 | 4 | 4 | 1 |
| 19–20 | CURVATURE mm | | 11 | 32 | 22 | 32 | 11 | 10 | 11 | 33 | 55 | 22 | 10 |
| 21 | TRANSVERSE | | 6 | 6 | 4 | 4 | 3 | 6 | 6 | 6 | 6 | 4 | 6 |
| 22 | LONGTUDINAL | | 0 | 5 | 3 | 3 | 3 | 0 | 3 | 1 | 0 | 0 | 0 |
| 23 | SYMMETRY | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 24 | EDGE FORM | | 4 | 1 | 4 | 1 | 4 | 4 | 1 | 4 | 4 | 4 | 4 |
| 25–26 | LENGTH mm | | 35 | 22 | 37 | 35 | 22 | 22 | 28 | 29 | 57 | 21 | 15 |
| 27 | S. PLACEMENT | | 0 | 1 | 0 | 1 | 1 | 5 | 3 | 1 | 1 | 1 | 0 |
| 28 | PATTERN | | 0 | 1 | 0 | 1 | 2 | 2 | 1 | 2 | 3 | 2 | 0 |
| 29 | HUMP | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30–31 | OUTLINE | BASE | 12 | 12 | 11 | 06 | 19 | 02 | 26 | 07 | 03 | 11 | 05 |
| 32 | CURVATURE | | 1 | 2 | 0 | 3 | 2 | 1 | 1 | 4 | 0 | 1 | 2 |
| 33 | SYMMETRY | | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 34 | S. PLACEMENT | | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 3 | 2 | 3 |
| 35 | PATTERN | | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 |
| 36 | EDGE FORM | | 1 | 3 | 1 | 3 | 1 | 1 | 3 | 2 | 2 | 1 | 2 |
| 37–38 | WIDTH | | 17 | 17 | 17 | 20 | 15 | 16 | 16 | 21 | 28 | 14 | 18 |
| 39 | JUNCTURE | HAFT | 1 | 1 | 1 | 1 | 2 | 4 | 1 | 4 | 4 | 4 | 3 |
| 40 | EDGE FORM | | 3 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| 41–42 | DIST. - PROX. LENGTH mm | | 07 | 10 | 06 | 05 | 03 | 10 | 05 | 10 | 14 | 09 | 07 |
| 43 | MEDIAL DEPTH | | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 6 | 2 | 2 |
| 44–45 | DIST. - DIST. WIDTH mm | | 19 | 21 | 19 | 20 | 14 | 18 | 14 | 23 | 36 | 18 | 17 |
| 46–47 | MED. - MED. WIDTH mm | | 14 | 12 | 14 | 15 | 11 | 22 | 12 | 15 | 21 | 13 | 14 |
| 48–49 | SH. - BLADE OUTLINE | SHOULDER | 10 | 24 | 24 | 12 | 24 | 24 | 09 | 10 | 91 | 24 | 12 |
| 50–52 | SH. - HAFT OUTLINE | | 064 | 083 | 083 | 083 | 083 | 083 | 083 | 065 | 065 | 066 | 083 |
| 53 | ANGLE | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 54 | OUTLINE | TANG | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 3 | 2 |
| 55–56 | LENGTH mm | | 09 | 12 | 08 | 05 | 07 | 10 | 08 | 17 | 16 | 08 | 09 |
| 57 | BILATERAL | SYMMETRY | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 58 | MATERIAL | | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 4 |
| 59–64 | PIT | PROVENIENCE | E10510 | E10510 | E10510 | W15520 | W25505 | W05505 | E30510 | W14520 | W20500 | W15500 | E00510 |
| 65–70 | DEPTH (INCHES) | | 094 | 085 | 094 | 086090 | 075084 | 092101 | 000005 | 085 | 078084 | 088092 | 095100 |
| 71–73 | EXCAVATION LEVEL | | | | | | | | | | | | |
| 74–75 | PROFILE LEVEL | | 08 | | 08 | | | | | | | | 03 |
| 76 | | | | E | | G | E | E | A | E | E | | |
| 77–78 | MASTER LEVEL | | 05 | 05 | 05 | 05 | 05 | 03 | 01 | 03 | 05 | | 05 |
| 79–80 | TYPE | TYPE | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 12 | 11 | 10 | 09 |

| Card col. | Field | Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01–04 | PSU ACCESSION NUMBER | IDENTIFICATION | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| 05–08 | ARTIFACT NUMBER | IDENTIFICATION | 1722 | 3021 | 1728 | 1713 | 1760 | 1727 | 5773 | 1723 | 1676 | 4596 | 1745 |
| 09–10 | LENGTH mm | DIMENSIONS | 53 | 51 | 43 | 58 | 35 | 57 | 40 | 78 | 34 | 32 | 34 |
| 11–12 | WIDTH | DIMENSIONS | 20 | 28 | 27 | 35 | 15 | 36 | 28 | 27 | 30 | 22 | 21 |
| 13–14 | THICKNESS mm | DIMENSIONS | 07 | 09 | 10 | 11 | 06 | 11 | 09 | 10 | 10 | 11 | 09 |
| 15–17 | WEIGHT (EST.) gm | DIMENSIONS | 079 | 144 | 087 | 194 | 025 | 001 | 088 | 212 | 001 | 064 | 001 |
| 18 | OUTLINE | BLADE | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 4 | 4 |
| 19–20 | CURVATURE mm | BLADE | 43 | 44 | 21 | 44 | 11 | 32 | 64 | 54 | 11 | 33 | 52 |
| 21 | TRANSVERSE | BLADE | 6 | 4 | 6 | 6 | 6 | 4 | 6 | 4 | 6 | 6 | 6 |
| 22 | LONGITUDINAL | BLADE | 3 | 3 | 8 | 0 | 0 | 3 | 4 | 4 | 4 | 4 | 3 |
| 23 | SYMMETRY | BLADE | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 24 | EDGE FORM | BLADE | 4 | 1 | 4 | 0 | 4 | 4 | 4 | 4 | 4 | 1 | 1 |
| 25–26 | LENGTH mm | BLADE | 42 | 33 | 31 | 43 | 25 | 37 | 28 | 65 | 25 | 22 | 29 |
| 27 | S. PLACEMENT | BLADE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| 28 | PATTERN | BLADE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| 29 | HUMP | BLADE | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 30–31 | OUTLINE | BASE | 11 | 02 | 01 | 07 | 02 | 01 | 02 | 01 | 01 | 14 | 14 |
| 32 | CURVATURE | BASE | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 3 |
| 33 | SYMMETRY | BASE | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 34 | S. PLACEMENT | BASE | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 |
| 35 | PATTERN | BASE | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 |
| 36 | EDGE FORM | BASE | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 |
| 37–38 | WIDTH | BASE | 15 | 09 | 15 | 11 | 11 | 18 | 28 | 26 | 29 | 17 | 19 |
| 39 | JUNCTURE | HAFT | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| 40 | EDGE FORM | HAFT | 2 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 1 |
| 41–42 | DIST. - PROX. LENGTH mm | HAFT | 13 | 21 | 13 | 26 | 11 | 25 | 11 | 14 | 14 | 10 | 11 |
| 43 | MEDIAL DEPTH | HAFT | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 1 | 1 | 4 | 2 |
| 44–45 | DIST. - DIST. WIDTH mm | HAFT | 19 | 28 | 27 | 34 | 15 | 35 | 26 | 26 | 28 | 21 | 20 |
| 46–47 | MED. - MED. WIDTH mm | HAFT | 14 | 15 | 18 | 18 | 11 | 18 | 22 | 23 | 26 | 12 | 15 |
| 48–49 | SH. - BLADE OUTLINE | SHOULDER | 09 | 12 | 24 | 12 | 22 | 12 | 24 | 09 | 12 | 12 | 24 |
| 50–52 | SH. - HAFT OUTLINE | SHOULDER | 083 | 035 | 032 | 035 | 022 | 000 | 083 | 082 | 083 | 083 | 084 |
| 53 | ANGLE | SHOULDER | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 54 | OUTLINE | TANG | 2 | 5 | 5 | 5 | 4 | 5 | 1 | 3 | 2 | 2 | 3 |
| 55–56 | LENGTH mm | TANG | 13 | 18 | 12 | 18 | 11 | 21 | 10 | 14 | 15 | 12 | 12 |
| 57 | BILATERAL | SYMMETRY | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 58 | MATERIAL | | 4 | 4 | 4 | 4 | 6 | 4 | 4 | 4 | 4 | 4 | 4 |
| 59–64 | PIT | PROVENIENCE | W20S05 | E10S10 | W10S00 | W15S05 | W15S00 | W25S15 | | W15S05 | W25S05 | E10S10 | W10S10 |
| 65–67 | DEPTH (INCHES) | PROVENIENCE | 078 | 080 | 072 | 078 | 097 | 090 | | 078 | 075 | 091 | 087 |
| 68–70 | DEPTH (INCHES) | PROVENIENCE | 084 | 088 | 078 | 084 | | 096 | | 084 | 084 | 101 | |
| 71–73 | EXCAVATION LEVEL | PROVENIENCE | | | | | | | | | | | |
| 74–75 | PROFILE LEVEL | PROVENIENCE | | 08 | | | | | | | | 08 | 03 |
| 76 | MASTER LEVEL | PROVENIENCE | E | | D | E | E | 6 | | E | E | | |
| 77–78 | MASTER LEVEL | PROVENIENCE | 05 | 05 | 03 | 05 | 05 | 05 | | 05 | 05 | 05 | 05 |
| 79–80 | TYPE | TYPE | 18 | 17 | 17 | 17 | 16 | 16 | 15 | 15 | 15 | 14 | 14 |

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| PSU Accession Number (01–04) | Artifact Number (05–08) | Dimensions: Length mm (09–10) | Dimensions: Width (11–12) | Dimensions: Thickness mm (13–14) | Dimensions: Weight (est.) gm (15–17) | Blade: Outline (18) | Blade: Curvature mm (19–20) | Blade: Transverse (21) | Blade: Longitudinal (22) | Blade: Symmetry (23) | Blade: Edge Form (24) | Blade: Length mm (25–26) | Blade: S. Placement (27) | Blade: Pattern (28) | Blade: Hump (29) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A661 | 1761 | 32 | 19 | 07 | 040 | 1 | 21 | 4 | 0 | 1 | 2 | 23 | 4 | 2 | 0 |
| A661 | 0545 | 00 | 31 | 08 | 001 | 4 | 65 | 6 | 4 | 0 | 1 | 76 | 0 | 0 | 0 |
| A661 | 1687 | 00 | 27 | 08 | 001 | 4 | 53 | 6 | 0 | 1 | 4 | 62 | 0 | 0 | 1 |
| A661 | 1749 | 57 | 41 | 10 | 180 | 8 | 32 | 4 | 3 | 1 | 4 | 35 | 0 | 0 | 1 |
| A661 | 0444 | 33 | 15 | 04 | 022 | 4 | 22 | 6 | 1 | 0 | 4 | 26 | 1 | 2 | 0 |
| A661 | 1683 | 41 | 29 | 07 | 001 | 4 | 43 | 6 | 3 | 1 | 4 | 64 | 0 | 0 | 0 |
| A661 | 1733 | 46 | 23 | 07 | 058 | 9 | 32 | 6 | 0 | 1 | 4 | 36 | 0 | 0 | 0 |
| A661 | 1752 | 45 | 28 | 07 | 069 | 4 | 41 | 4 | 3 | 1 | 2 | 32 | 1 | 1 | 0 |
| A661 | 2984 | 59 | 25 | 08 | 084 | 4 | 22 | 6 | 4 | 0 | 2 | 47 | 3 | 2 | 1 |
| A661 | 6714 | 36 | 26 | 06 | 001 | 4 | 21 | 6 | 3 | 1 | 4 | 23 | 0 | 0 | 0 |
| A661 | 1739 | 47 | 16 | 10 | 059 | 4 | 41 | 6 | 4 | 1 | 4 | 37 | 1 | 2 | 1 |

| Artifact Number | Base: Outline (30–31) | Base: Curvature (32) | Base: Symmetry (33) | Base: S. Placement (34) | Base: Pattern (35) | Base: Edge Form (36) | Base: Width (37–38) | Haft: Juncture (39) | Haft: Edge Form (40) | Haft: Dist.-Prox. Length mm (41–42) | Haft: Medial Depth (43) | Haft: Dist.-Dist. Width mm (44–45) | Haft: Med.-Med. Width mm (46–47) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1761 | 12 | 1 | 0 | 2 | 2 | 2 | 14 | 2 | 2 | 09 | 2 | 18 | 13 |
| 0545 | 12 | 1 | 0 | 0 | 0 | 1 | 22 | 4 | 1 | 13 | 4 | 28 | 18 |
| 1687 | 11 | 1 | 0 | 2 | 2 | 1 | 20 | 2 | 3 | 15 | 3 | 27 | 17 |
| 1749 | 12 | 2 | 0 | 0 | 0 | 2 | 31 | 2 | 2 | 24 | 6 | 40 | 24 |
| 0444 | 11 | 0 | 1 | 0 | 0 | 3 | 09 | 2 | 1 | 08 | 1 | 14 | 09 |
| 1683 | 02 | 2 | 1 | 0 | 0 | 1 | 18 | 2 | 1 | 18 | 3 | 29 | 17 |
| 1733 | 11 | 0 | 0 | 0 | 0 | 1 | 13 | 2 | 1 | 10 | 2 | 23 | 13 |
| 1752 | 12 | 1 | 1 | 2 | 1 | 1 | 15 | 2 | 1 | 15 | 2 | 28 | 16 |
| 2984 | 01 | 1 | 0 | 0 | 0 | 1 | 17 | 2 | 1 | 15 | 3 | 25 | 14 |
| 6714 | 02 | 0 | 1 | 0 | 0 | 1 | 17 | 4 | 1 | 11 | 2 | 21 | 13 |
| 1739 | 23 | 3 | 1 | 2 | 2 | 2 | 15 | 4 | 1 | 10 | 2 | 16 | 11 |

| Artifact Number | Shoulder: Sh.-Blade Outline (48–49) | Shoulder: Sh.-Haft Outline (50–52) | Shoulder: Angle (53) | Tang: Outline (54) | Tang: Length mm (55–56) | Bilateral Symmetry (57) | Material (58) | Provenience: Pit (59–64) | Provenience: Depth (inches) (65–70) | Excavation Level (71–73) | Profile Level (74–75) | Master Level (76–78) | Type (79–80) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1761 | 23 | 100 | 3 | 3 | 10 | 1 | 4 | W20S10 | 078082 | | | É04 | 18 |
| 0545 | 01 | 058 | 2 | 3 | 13 | 1 | 4 | E05S10 | 066088 | | | É04 | 19 |
| 1687 | 09 | 082 | 3 | 3 | 14 | 1 | 4 | W20S00 | 078084 | | | E05 | 19 |
| 1749 | 22 | 064 | 3 | 3 | 22 | 0 | 4 | W25S05 | 075084 | | | E05 | 20 |
| 0444 | 24 | 083 | 3 | 2 | 07 | 1 | 4 | E10S10 | 078082 | | | É04 | 21 |
| 1683 | 24 | 083 | 3 | 1 | 17 | 1 | 4 | W20S00 | 078084 | | | E05 | 21 |
| 1733 | 07 | 064 | 3 | 3 | 09 | 1 | 4 | W20S10 | 072078 | | | É04 | 21 |
| 1752 | 22 | 023 | 3 | 5 | 14 | 1 | 4 | W35S00 | 035048 | | | B02 | 21 |
| 2984 | 12 | 083 | 3 | 2 | 14 | 1 | 4 | W40S15 | 035 | | | B03 | 21 |
| 6714 | 12 | 083 | 3 | 2 | 13 | 1 | 4 | W20S05 | 072078 | | | D03 | 21 |
| 1739 | 19 | 064 | 3 | 3 | 09 | 1 | 4 | W20S05 | 072078 | | | E05 | 22 |

| Section | Field | Cols | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | PSU ACCESSION NUMBER | 01–04 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| | ARTIFACT NUMBER | 05–08 | 0629 | 1759 | 1675 | 1735 | 1715 | 1833 | 1732 | 0002 | 6722 | 4599 | 4593 |
| DIMENSIONS | LENGTH mm | 09–10 | 34 | 41 | 53 | 65 | 37 | 46 | 52 | 42 | 39 | 42 | 48 |
| | WIDTH | 11–12 | 20 | 27 | 33 | 28 | 24 | 23 | 28 | 24 | 22 | 21 | 22 |
| | THICKNESS mm | 13–14 | 05 | 08 | 08 | 08 | 10 | 07 | 09 | 07 | 07 | 08 | 10 |
| | WEIGHT (EST.) gm | 15–17 | 043 | 075 | 001 | 001 | 070 | 069 | 133 | 070 | 053 | 056 | 076 |
| BLADE | OUTLINE | 18 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | CURVATURE mm | 19–20 | 32 | 53 | 43 | 32 | 32 | 33 | 44 | 32 | 33 | 33 | 22 |
| | TRANSVERSE | 21 | 1 | 6 | 4 | 6 | 6 | 6 | 6 | 6 | 8 | 6 | 6 |
| | LONGTUDINAL | 22 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 7 | 3 | 4 | 4 |
| | SYMMETRY | 23 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| | EDGE FORM | 24 | 4 | 4 | 4 | 4 | 4 | 1 | 4 | 4 | 4 | 4 | 4 |
| | LENGTH mm | 25–26 | 31 | 29 | 41 | 51 | 24 | 37 | 43 | 32 | 27 | 29 | 32 |
| | S. PLACEMENT | 27 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 |
| | PATTERN | 28 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 |
| | HUMP | 29 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| BASE | OUTLINE | 30–31 | 06 | 12 | 01 | 05 | 01 | 02 | 06 | 02 | 02 | 01 | 05 |
| | CURVATURE | 32 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 1 | 7 | 0 | 3 |
| | SYMMETRY | 33 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | S. PLACEMENT | 34 | 0 | 2 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 2 | 0 |
| | PATTERN | 35 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 0 |
| | EDGE FORM | 36 | 3 | 2 | 2 | 1 | 1 | 1 | 3 | 2 | 0 | 1 | 2 |
| | WIDTH | 37–38 | 17 | 19 | 16 | 17 | 18 | 18 | 18 | 19 | 13 | 14 | 10 |
| HAFT | JUNCTURE | 39 | 1 | 4 | 2 | 2 | 2 | 4 | 5 | 4 | 2 | 2 | 4 |
| | EDGE FORM | 40 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| | DIST. - PROX. LENGTH mm | 41–42 | 07 | 13 | 16 | 14 | 13 | 08 | 09 | 11 | 12 | 13 | 13 |
| | MEDIAL DEPTH | 43 | 2 | 4 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | DIST. - DIST. WIDTH mm | 44–45 | 18 | 26 | 33 | 27 | 25 | 23 | 28 | 24 | 20 | 20 | 21 |
| | MED. - MED. WIDTH mm | 46–47 | 15 | 15 | 13 | 16 | 16 | 15 | 17 | 15 | 12 | 12 | 14 |
| SHOULDER | SH. - BLADE OUTLINE | 48–49 | 07 | 13 | 76 | 24 | 24 | 10 | 05 | 24 | 17 | 24 | 22 |
| | SH. - HAFT OUTLINE | 50–52 | 065 | 005 | 017 | 034 | 034 | 064 | 095 | 083 | 011 | 032 | 083 |
| | ANGLE | 53 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 |
| TANG | OUTLINE | 54 | 2 | 2 | 2 | 4 | 4 | 3 | 2 | 2 | 4 | 2 | 2 |
| | LENGTH mm | 55–56 | 04 | 12 | 13 | 13 | 13 | 09 | 07 | 12 | 12 | 13 | 13 |
| SYMMETRY | BILATERAL | 57 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| | MATERIAL | 58 | 5 | 9 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 |
| PROVENIENCE | PIT | 59–64 | W20S20 | E00S00 | W20S05 | E00S05 | E00S05 | W15S10 | W20S10 | E30S10 | W20S15 | | |
| | DEPTH (INCHES) | 65–70 | 072078 | 072 | 066072 | 078 | 078 | 078082 | 078082 | 010015 | 066072 | | |
| | EXCAVATION LEVEL | 71–73 | | | | | | | | | | | |
| | PROFILE LEVEL | 74–75 | | | | | | | | | 04 | | |
| | | 76 | E | C | D | C | C | E′ | E′ | | | | |
| | MASTER LEVEL | 77–78 | 03 | 04 | 03 | 04 | 04 | 04 | 04 | 02 | 03 | | |
| TYPE | TYPE | 79–80 | 26 | 25 | 25 | 24 | 24 | 23 | 23 | 23 | 22 | 22 | 22 |

| Col. | Field | Category | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01–04 | PSU ACCESSION NUMBER | IDENTIFICATION | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| 05–08 | ARTIFACT NUMBER | | 6715 | 3063 | 2132 | 1726 | 1725 | 1709 | 0410 | 1712 | 1689 | 1685 | 4794 | 3008 |
| 09–10 | LENGTH mm | DIMENSIONS | 42 | 49 | 46 | 55 | 44 | 27 | 56 | 58 | 41 | 46 | 43 | 43 |
| 11–12 | WIDTH | | 18 | 20 | 18 | 21 | 21 | 22 | 23 | 35 | 19 | 22 | 22 | 19 |
| 13–14 | THICKNESS mm | | 12 | 09 | 09 | 09 | 09 | 09 | 11 | 08 | 07 | 07 | 05 | 03 |
| 15–17 | WEIGHT (EST.) gm | | 068 | 083 | 074 | 080 | 070 | 001 | 144 | 144 | 001 | 001 | 001 | 029 |
| 18 | OUTLINE | BLADE | 4 | 8 | 4 | 4 | 8 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 19–20 | CURVATURE mm | | 42 | 33 | 32 | 32 | 33 | 33 | 53 | 32 | 12 | 33 | 11 | 33 |
| 21 | TRANSVERSE | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 6 | 3 |
| 22 | LONGITUDINAL | | 4 | 3 | 0 | 5 | 0 | 0 | 4 | 4 | 4 | 0 | 3 | 5 |
| 23 | SYMMETRY | | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 24 | EDGE FORM | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 |
| 25–26 | LENGTH mm | | 28 | 35 | 37 | 44 | 33 | 43 | 42 | 45 | 38 | 38 | 37 | 32 |
| 27 | S. PLACEMENT | | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 28 | PATTERN | | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 29 | HUMP | | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 30–31 | OUTLINE | BASE | 01 | 06 | 06 | 13 | 06 | 12 | 06 | 14 | 16 | 26 | 02 | 05 |
| 32 | CURVATURE | | 1 | 3 | 3 | 1 | 0 | 1 | 5 | 3 | 1 | 0 | 1 | 1 |
| 33 | SYMMETRY | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 34 | S. PLACEMENT | | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 | PATTERN | | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 36 | EDGE FORM | | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| 37–38 | WIDTH | | 14 | 16 | 15 | 12 | 13 | 17 | 21 | 23 | 19 | 19 | 21 | 16 |
| 39 | JUNCTURE | HAFT | 1 | 2 | 4 | 2 | 2 | 4 | 3 | 4 | 1 | 1 | 1 | 1 |
| 40 | EDGE FORM | | 4 | 1 | 3 | 3 | 1 | 3 | 1 | 2 | 1 | 3 | 1 | 3 |
| 41–42 | DIST.-PROX. LENGTH mm | | 13 | 12 | 00 | 12 | 12 | 12 | 13 | 19 | 06 | 11 | 07 | 06 |
| 43 | MEDIAL DEPTH | | 1 | 2 | 2 | 2 | 3 | 2 | 3 | 4 | 2 | 1 | 2 | 1 |
| 44–45 | DIST.-DIST. WIDTH mm | | 16 | 20 | 18 | 20 | 21 | 23 | 23 | 35 | 18 | 21 | 22 | 18 |
| 46–47 | MED.-MED. WIDTH mm | | 12 | 15 | 12 | 13 | 11 | 14 | 16 | 19 | 14 | 17 | 17 | 14 |
| 48–49 | SH.-BLADE OUTLINE | SHOULDER | 24 | 22 | 24 | 12 | 22 | 22 | 24 | 22 | 12 | 09 | 23 | 09 |
| 50–52 | SH.-HAFT OUTLINE | | 102 | 064 | 033 | 022 | 065 | 064 | 083 | 064 | 033 | 083 | 101 | 083 |
| 53 | ANGLE | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 54 | OUTLINE | TANG | 8 | 3 | 1 | 4 | 2 | 3 | 1 | 3 | 1 | 1 | 1 | 7 |
| 55–56 | LENGTH mm | | 13 | 12 | 03 | 11 | 11 | 14 | 13 | 18 | 09 | 11 | 07 | 12 |
| 57 | BILATERAL | SYMMETRY | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 58 | MATERIAL | | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 59–64 | PIT | PROVENIENCE | W20S05 | | W20S00 | W15S10 | W30S00 | E00S10 | SGA ? | W20S05 | E05S20 | W15S10 | E15S10 | |
| 65–70 | DEPTH (INCHES) | | 066072 | | 054060 | 050056 | 072078 | 054065 | 005 | 066072 | 058068 | 062068 | 080084 | |
| 71–73 | EXCAVATION LEVEL | | | | | | | | | | | | | |
| 74–75 | PROFILE LEVEL | | | | | | | | | | | | | |
| 76–78 | MASTER LEVEL | | D03 | | B02 | B02 | D02 | C03 | A01 | D03 | D04 | C03 | E04 | |
| 79–80 | TYPE | TYPE | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 28 | 27 | 27 | 26 | 26 |

| Category | Columns | Field | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | 01–04 | PSU ACCESSION NUMBER | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| | 05–08 | ARTIFACT NUMBER | 6711 | 3153 | 1714 | 1751 | 0553 | 5700 | 3414 | 1718 | 3009 |
| DIMENSIONS | 09–10 | LENGTH mm | 41 | 50 | 36 | 52 | 40 | 40 | 49 | 38 | 47 |
| | 11–12 | WIDTH | 22 | 28 | 21 | 26 | 22 | 27 | 28 | 25 | 21 |
| | 13–14 | THICKNESS mm | 07 | 09 | 06 | 07 | 07 | 09 | 09 | 04 | 08 |
| | 15–17 | WEIGHT (EST.) gm | 001 | 001 | 038 | 081 | 058 | 001 | 010 | 045 | 082 |
| BLADE | 18 | OUTLINE | 4 | 1 | 4 | 8 | 4 | 4 | 2 | 4 | 4 |
| | 19–20 | CURVATURE mm | 22 | 11 | 21 | 44 | 33 | 33 | 54 | 43 | 43 |
| | 21 | TRANSVERSE | 4 | 6 | 6 | 6 | 6 | 4 | 6 | 6 | 6 |
| | 22 | LONGTUDINAL | 8 | 0 | 3 | 4 | 0 | 3 | 0 | 2 | 3 |
| | 23 | SYMMETRY | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| | 24 | EDGE FORM | 1 | 1 | 4 | 2 | 1 | 4 | 4 | 4 | 4 |
| | 25–26 | LENGTH mm | 33 | 38 | 23 | 44 | 30 | 37 | 34 | 25 | 39 |
| | 27 | S. PLACEMENT | 1 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| | 28 | PATTERN | 2 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| | 29 | HUMP | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| BASE | 30–31 | OUTLINE | 01 | 02 | 02 | 07 | 05 | 02 | 06 | 06 | 06 |
| | 32 | CURVATURE | 0 | 2 | 0 | 4 | 2 | 3 | 1 | 3 | 1 |
| | 33 | SYMMETRY | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 34 | S. PLACEMENT | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 |
| | 35 | PATTERN | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| | 36 | EDGE FORM | 1 | 3 | 1 | 3 | 3 | 1 | 1 | 1 | 3 |
| | 37–38 | WIDTH | 12 | 15 | 17 | 20 | 19 | 16 | 18 | 15 | 16 |
| HAFT | 39 | JUNCTURE | 2 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 4 |
| | 40 | EDGE FORM | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 3 |
| | 41–42 | DIST. – PROX. LENGTH mm | 08 | 12 | 11 | 05 | 07 | 11 | 15 | 10 | 11 |
| | 43 | MEDIAL DEPTH | 3 | 2 | 1 | 4 | 3 | 3 | 4 | 2 | 2 |
| | 44–45 | DIST. – DIST. WIDTH mm | 21 | 28 | 21 | 25 | 22 | 26 | 26 | 24 | 20 |
| | 46–47 | MED. – MED. WIDTH mm | 12 | 17 | 13 | 15 | 13 | 14 | 14 | 14 | 15 |
| SHOULDER | 48–49 | SH. – BLADE OUTLINE | 18 | 10 | 12 | 18 | 12 | 22 | 23 | 23 | 12 |
| | 50–52 | SH. – HAFT OUTLINE | 016 | 022 | 083 | 077 | 076 | 064 | 101 | 023 | 022 |
| | 53 | ANGLE | 2 | 3 | 3 | 2 | 1 | 3 | 3 | 3 | 3 |
| TANG | 54 | OUTLINE | 4 | 4 | 2 | 2 | 2 | 3 | 2 | 2 | 8 |
| | 55–56 | LENGTH mm | 06 | 10 | 13 | 08 | 10 | 09 | 15 | 12 | 11 |
| SYMMETRY | 57 | BILATERAL | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | C |
| | 58 | MATERIAL | 5 | 4 | 4 | 3 | 4 | 4 | 8 | 6 | 4 |
| PROVENIENCE | 59–64 | PIT | E15S10 | W20S00 | W10S10 | W35S00 | W05S00 | W15S15 | W15S00 | W10S10 | |
| | 65–70 | DEPTH (INCHES) | 040052 | 056066 | 059 | 040046 | 054062 | 060 | 046056 | 050059 | |
| | 71–73 | EXCAVATION LEVEL | | | | | | | | | |
| | 74–75 | PROFILE LEVEL | | | | | 01 | | | | |
| | 76–78 | MASTER LEVEL | B02 | E02 | C03 | 303 | 03 | C02 | B02 | C03 | |
| TYPE | 79–80 | TYPE | 33 | 33 | 32 | 31 | 31 | 30 | 30 | 30 | 29 |

| Cols | Field | Group | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01–04 | PSU ACCESSION NUMBER | IDENTIFICATION | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | | A661 | | A661 | | A661 |
| 05–08 | ARTIFACT NUMBER | IDENTIFICATION | 2689 | 2157 | 1765 | 1757 | 1700 | 1679 | 0207 | 0045 | 0044 | | 3007 | | 6721 | | 3698 |
| 09–10 | LENGTH mm | DIMENSIONS | 23 | 22 | 22 | 20 | | | 23 | 24 | 27 | | 25 | | 42 | | 71 |
| 11–12 | WIDTH | DIMENSIONS | 23 | 23 | 24 | 22 | | | 20 | 25 | 22 | | 19 | | 19 | | 68 |
| 13–14 | THICKNESS mm | DIMENSIONS | 04 | 05 | 04 | 04 | | | 04 | 05 | 05 | | 04 | | 06 | | 07 |
| 15–17 | WEIGHT (EST.) gm | DIMENSIONS | 001 | 001 | 010 | 015 | | | 015 | 025 | 019 | | 022 | | 001 | | 001 |
| 18 | OUTLINE | BLADE | 1 | 4 | 3 | 4 | | | 1 | 1 | 1 | | 4 | | 4 | | 4 |
| 19–20 | CURVATURE mm | BLADE | 11 | 11 | 11 | 21 | | | 11 | 10 | 00 | | 21 | | 22 | | 55 |
| 21 | TRANSVERSE | BLADE | 4 | 6 | 6 | 6 | | | 4 | 4 | 6 | | 6 | | 6 | | 3 |
| 22 | LONGITUDINAL | BLADE | 0 | 4 | 3 | 4 | | | 4 | 4 | 3 | | 0 | | 3 | | 2 |
| 23 | SYMMETRY | BLADE | 1 | 0 | 0 | 1 | | | 1 | 1 | 0 | | 0 | | 1 | | 1 |
| 24 | EDGE FORM | BLADE | 4 | 4 | 4 | 4 | | | 1 | 4 | 1 | | 4 | | 1 | | 4 |
| 25–26 | LENGTH mm | BLADE | 22 | 23 | 23 | 22 | | | 22 | 22 | 27 | | 17 | | 26 | | 62 |
| 27 | S. PLACEMENT | BLADE | 1 | 1 | 1 | 2 | | | 1 | 1 | 0 | | 1 | | 0 | | 0 |
| 28 | PATTERN | BLADE | 2 | 2 | 2 | 2 | | | 2 | 2 | 0 | | 2 | | 0 | | 0 |
| 29 | HUMP | BLADE | 1 | 0 | 0 | 0 | | | 0 | 0 | 0 | | 0 | | 0 | | 0 |
| 30–31 | OUTLINE | BASE | 12 | 12 | 12 | 12 | | | 01 | 01 | 12 | | 17 | | 02 | | 01 |
| 32 | CURVATURE | BASE | 1 | 2 | 2 | 1 | | | 1 | 1 | 2 | | 2 | | 2 | | 0 |
| 33 | SYMMETRY | BASE | 0 | 0 | 0 | 1 | | | 1 | 1 | 0 | | 0 | | 1 | | 0 |
| 34 | S. PLACEMENT | BASE | 2 | 0 | 3 | 2 | | | 2 | 0 | 2 | | 0 | | 0 | | 3 |
| 35 | PATTERN | BASE | 2 | 0 | 2 | 1 | | | 2 | 0 | 2 | | 0 | | 0 | | 1 |
| 36 | EDGE FORM | BASE | 3 | 3 | 1 | 3 | | | 3 | 3 | 1 | | 1 | | 1 | | 7 |
| 37–38 | WIDTH | BASE | 23 | 23 | 24 | 22 | | | 21 | 25 | 22 | | 19 | | 16 | | 21 |
| 39 | JUNCTURE | HAFT | | | | | | | | | | | 1 | | 4 | | 1 |
| 40 | EDGE FORM | HAFT | | | | | | | | | | | 1 | | 1 | | 2 |
| 41–42 | DIST. - PROX. LENGTH mm | HAFT | | | | | | | | | | | 05 | | 14 | | 53 |
| 43 | MEDIAL DEPTH | HAFT | | | | | | | | | | | 2 | | 3 | | 2 |
| 44–45 | DIST. - DIST. WIDTH mm | HAFT | | | | | | | | | | | 19 | | 19 | | 32 |
| 46–47 | MED. - MED. WIDTH mm | HAFT | | | | | | | | | | | 16 | | 10 | | 17 |
| 48–49 | SH. - BLADE OUTLINE | SHOULDER | | | | | | | | | | | 22 | | 23 | | 18 |
| 50–52 | SH. - HAFT OUTLINE | SHOULDER | | | | | | | | | | | 065 | | 101 | | 016 |
| 53 | ANGLE | SHOULDER | | | | | | | | | | | 3 | | 3 | | 1 |
| 54 | OUTLINE | TANG | | | | | | | | | | | 1 | | 2 | | 4 |
| 55–56 | LENGTH mm | TANG | | | | | | | | | | | 07 | | 14 | | 09 |
| 57 | BILATERAL | SYMMETRY | 0 | 0 | 1 | 1 | | | 1 | 1 | 0 | | 0 | | 1 | | 1 |
| 58 | MATERIAL | | 2 | 4 | 3 | 3 | | | 4 | 4 | 4 | | 4 | | 4 | | 4 |
| 59–64 | PIT | PROVENIENCE | W05S05 | W20S15 | E00S10 | E00S10 | E15S05 | W20S10 | E30S00 | E30S05 | E30S05 | | E30S10 | | E10S15 | | W20S05 |
| 65–67 | DEPTH (INCHES) | PROVENIENCE | 040 | 054 | 042 | 046 | 048 | 066 | 005 | 030 | 030 | | 001 | | 048 | | 044 |
| 68–70 | DEPTH (INCHES) | PROVENIENCE | 046 | 060 | 048 | 050 | 056 | 072 | 010 | 039 | 039 | | 015 | | | | 054 |
| 71–73 | EXCAVATION LEVEL | PROVENIENCE | | | | | | | | | | | | | | | |
| 74–75 | PROFILE LEVEL | PROVENIENCE | | 03 | | | | | | | | | | | | | |
| 76–78 | MASTER LEVEL | PROVENIENCE | B02 | 03 | B02 | B02 | B02 | C03 | B02 | B02 | B02 | | 02 | | B02 | | B02 |
| 79–80 | TYPE | TYPE | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | | 36 | | 35 | | 34 |

| Section | Col. | Field | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | 01–04 | PSU ACCESSION NUMBER | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | - | A661 | A661 | A661 | A661 | A661 |
| | 05–08 | ARTIFACT NUMBER | 1705 | 1680 | 0206 | 0092 | 0091 | 0090 | 0036 | 0035 | 0008 | - | 1707 | 6712 | 5761 | 5151 | 5072 |
| DIMENSIONS | 09–10 | LENGTH mm | 23 | 17 | 24 | - | 23 | 22 | 21 | 20 | 28 | - | 29 | 30 | - | 36 | - |
| | 11–12 | WIDTH | 17 | 16 | 19 | - | 19 | 17 | 13 | 17 | 16 | - | 22 | 25 | - | 23 | - |
| | 13–14 | THICKNESS mm | 04 | 03 | 03 | - | 04 | 03 | 03 | 03 | 04 | - | 03 | 04 | - | 04 | - |
| | 15–17 | WEIGHT (EST.) gm | 001 | 001 | 010 | - | 012 | 010 | 006 | 001 | 012 | - | 001 | 018 | - | 001 | - |
| BLADE | 18 | OUTLINE | 1 | 1 | 3 | - | 3 | 1 | 1 | 1 | 1 | - | 1 | 4 | - | 4 | - |
| | 19–20 | CURVATURE mm | 20 | 10 | 11 | - | 11 | 00 | 11 | 00 | 00 | - | 11 | 11 | - | 21 | - |
| | 21 | TRANSVERSE | 6 | 4 | 6 | - | 4 | 6 | 6 | 6 | 6 | - | 6 | 4 | - | 6 | - |
| | 22 | LONGTUDINAL | 3 | 3 | 2 | - | 3 | 0 | 0 | 4 | 0 | - | 3 | 3 | - | 3 | - |
| | 23 | SYMMETRY | 1 | 1 | 1 | - | 0 | 1 | 1 | 0 | 0 | - | 0 | 0 | - | 1 | - |
| | 24 | EDGE FORM | 1 | 1 | 1 | - | 4 | 1 | 1 | 4 | 4 | - | 1 | 4 | - | 4 | - |
| | 25–26 | LENGTH mm | 22 | 16 | 24 | - | 24 | 24 | 21 | 20 | 28 | - | 28 | 29 | - | 36 | - |
| | 27 | S. PLACEMENT | 5 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | - | 0 | - |
| | 28 | PATTERN | 0 | 2 | 2 | - | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | - | 0 | - |
| | 29 | HUMP | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| BASE | 30–31 | OUTLINE | 12 | 12 | 02 | - | 12 | 11 | 12 | 11 | 12 | - | 11 | 11 | - | 12 | - |
| | 32 | CURVATURE | 1 | 1 | 1 | - | 2 | 2 | 1 | 2 | 1 | - | 2 | 2 | - | 1 | - |
| | 33 | SYMMETRY | 1 | 0 | 0 | - | 0 | 0 | 1 | 1 | 1 | - | 1 | 0 | - | 1 | - |
| | 34 | S. PLACEMENT | 3 | 2 | 3 | - | 2 | 3 | 2 | 3 | 3 | - | 3 | 3 | - | 3 | - |
| | 35 | PATTERN | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | - | 2 | - |
| | 36 | EDGE FORM | 1 | 1 | 3 | - | 3 | 1 | 3 | 3 | 1 | - | 1 | 1 | - | 1 | - |
| | 37–38 | WIDTH | 17 | 16 | 19 | - | 19 | 17 | 13 | 17 | 16 | - | 22 | 25 | - | 23 | - |
| HAFT | 39 | JUNCTURE | | | | | | | | | | | | | | | |
| | 40 | EDGE FORM | | | | | | | | | | | | | | | |
| | 41–42 | DIST. - PROX. LENGTH mm | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 43 | MEDIAL DEPTH | | | | | | | | | | | | | | | |
| | 44–45 | DIST. - DIST. WIDTH mm | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 46–47 | MED. - MED. WIDTH mm | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SHOULDER | 48–49 | SH. - BLADE OUTLINE | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 50–52 | SH. - HAFT OUTLINE | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 53 | ANGLE | | | | | | | | | | | | | | | |
| TANG | 54 | OUTLINE | | | | | | | | | | | | | | | |
| | 55–56 | LENGTH mm | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SYMMETRY | 57 | BILATERAL | 1 | 1 | 1 | | 0 | 0 | 1 | 0 | 1 | | 0 | 0 | | 1 | |
| | 58 | MATERIAL | 3 | 3 | 4 | | 4 | 4 | 4 | 4 | 3 | | 2 | 3 | | 3 | |
| PROVENIENCE | 59–64 | PIT | W10S15 | W25S15 | E30S00 | E30S05 | E30S05 | E30S05 | E30S10 | E30S10 | E30S10 | - | E15S05 | W15S05 | E25S05 | E15S05 | E20S05 |
| | 65–70 | DEPTH (INCHES) | 064066 | 072080 | 005010 | 010015 | 010015 | 010015 | 000005 | 000005 | 010015 | - | 069 | 044050 | 060 | 054 | 076 |
| | 71–73 | EXCAVATION LEVEL | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 74–75 | PROFILE LEVEL | 03 | 04 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 76 | | | | B | B | B | B | A | A | B | | B | B | B | B | B |
| | 77–78 | MASTER LEVEL | 03 | 03 | 02 | 02 | 02 | 02 | 01 | 01 | 02 | - | 02 | 02 | 02 | 02 | 02 |
| TYPE | 79–80 | TYPE | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 | - | 38 | 38 | 38 | 38 | 38 |

| PSU Accession Number (01–04) | Artifact Number (05–08) | Length mm (09–10) | Width (11–12) | Thickness mm (13–14) | Weight (est.) gm (15–17) | Blade Outline (18) | Blade Curvature mm (19–20) | Blade Transverse (21) | Blade Longitudinal (22) | Blade Symmetry (23) | Blade Edge Form (24) | Blade Length mm (25–26) | Blade S. Placement (27) | Blade Pattern (28) | Blade Hump (29) | Base Outline (30–31) | Base Curvature (32) | Base Symmetry (33) | Base S. Placement (34) | Base Pattern (35) | Base Edge Form (36) | Base Width (37–38) | Bilateral Symmetry (57) | Material (58) | Pit (59–64) | Depth (inches) (65–70) | Excavation Level (71–73) | Profile Level (74–75) | Master Level (76–78) | Type (79–80) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A661 | 6725 | | | | | | | | | | | | | | | | | | | | | | | | W25S15 | 072080 | | | E03 | 39 |
| A661 | 6724 | | | | | | | | | | | | | | | | | | | | | | | | W20S15 | 066072 | | 04 | 03 | 39 |
| A661 | 6723 | 27 | 17 | 04 | 014 | 4 | 21 | 6 | 4 | 1 | 4 | 28 | 1 | 2 | 0 | 12 | 1 | 0 | 0 | 0 | 3 | 17 | 1 | 4 | W15S15 | 060066 | | | C02 | 39 |
| A661 | 6719 | 25 | 16 | 04 | 012 | 1 | 10 | 4 | 0 | 0 | 4 | 26 | 0 | 0 | 0 | 01 | 0 | 0 | 0 | 0 | 1 | 16 | 1 | 4 | W20S15 | 066072 | | 04 | 03 | 39 |
| A661 | 6717 | 24 | 16 | 05 | 014 | 4 | 11 | 4 | 0 | 1 | 4 | 26 | 0 | 0 | 0 | 01 | 1 | 0 | 0 | 0 | 3 | 16 | 1 | 4 | N20S05 | 066072 | | | B02 | 39 |
| A661 | 5772 | 25 | 19 | 05 | 014 | 1 | 00 | 6 | 4 | 1 | 4 | 26 | 0 | 0 | 0 | 12 | 1 | 1 | 0 | 0 | 3 | 19 | 1 | 4 | E20S00 | 062066 | | | E02 | 39 |
| A661 | 5769 | 19 | 14 | 03 | 005 | 1 | 00 | 6 | 0 | 1 | 4 | 20 | 4 | 2 | 1 | 01 | 0 | 0 | 0 | 0 | 3 | 14 | 1 | 4 | E15S20 | 079 | | | F03 | 39 |
| A661 | 5762 | 25 | 18 | 04 | 010 | 1 | 00 | 4 | 3 | 0 | 1 | 25 | 1 | 2 | 0 | 01 | 0 | 0 | 3 | 2 | 1 | 18 | 0 | 2 | E25S05 | 060 | | 06 | 02 | 39 |
| A661 | 5760 | 23 | 14 | 03 | 001 | 4 | 21 | 6 | 4 | 1 | 1 | 21 | 1 | 2 | 0 | 05 | 1 | 1 | 3 | 2 | 3 | 14 | 1 | 3 | E25S05 | 060 | | | B02 | 39 |
| A661 | 4037 | | | | | | | | | | | | | | | | | | | | | | | | E15S05 | 044048 | | | B02 | 39 |
| A661 | 4245 | 14 | 15 | 04 | 006 | 1 | 10 | 4 | 4 | 1 | 4 | 16 | 1 | 2 | 0 | 12 | 1 | 0 | 3 | 2 | 3 | 15 | 1 | 3 | E15S10 | 052056 | | | B02 | 39 |
| A661 | 1747 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 39 |

Form field groups: IDENTIFICATION (PSU Accession Number 01–04; Artifact Number 05–08); DIMENSIONS (Length mm 09–10; Width 11–12; Thickness mm 13–14; Weight (est.) gm 15–17); BLADE (Outline 18; Curvature mm 19–20; Transverse 21; Longitudinal 22; Symmetry 23; Edge Form 24; Length mm 25–26; S. Placement 27; Pattern 28; Hump 29); BASE (Outline 30–31; Curvature 32; Symmetry 33; S. Placement 34; Pattern 35; Edge Form 36; Width 37–38); HAFT (Juncture 39; Edge Form 40; Dist.–Prox. Length mm 41–42; Medial Depth 43; Dist.–Dist. Width mm 44–45; Med.–Med. Width mm 46–47); SHOULDER (Sh.–Blade Outline 48–49; Sh.–Haft Outline 50–52; Angle 53); TANG (Outline 54; Length mm 55–56); SYMMETRY (Bilateral 57); Material 58; PROVENIENCE (Pit 59–64; Depth (inches) 65–70; Excavation Level 71–73; Profile Level 74–75; Master Level 76–78); TYPE (Type 79–80).

| Section | Field no. | Field | Rec. 1 | Rec. 2 | Rec. 3 | Rec. 4 | Rec. 5 | Rec. 6 | Rec. 7 | Rec. 8 | Rec. 9 | Rec. 10 | Rec. 11 | Rec. 12 | Rec. 13 | Rec. 14 | Rec. 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | 01–04 | PSU ACCESSION NUMBER | A661 | A661 | A661 | A661 | | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| | 05–08 | ARTIFACT NUMBER | 0154 | 1694 | 3422 | 3476 | | 0009 | 0131 | C2C4 | C208 | 1644 | 1692 | 1717 | 1741 | 1750 | 1753 |
| DIMENSIONS | 09–10 | LENGTH mm | 32 | 35 | 27 | 38 | | 24 | 17 | 29 | 29 | | 30 | 21 | 30 | 30 | 19 |
| | 11–12 | WIDTH | 23 | 21 | 26 | 25 | | 23 | 27 | 17 | 26 | | 20 | 24 | 21 | 17 | 19 |
| | 13–14 | THICKNESS mm | 04 | 05 | 04 | 05 | | 06 | 05 | 06 | 07 | | 07 | 06 | 08 | 06 | 07 |
| | 15–17 | WEIGHT (EST.) gm | 001 | 001 | 001 | 001 | | 022 | 001 | 025 | 023 | | 036 | 024 | 042 | 027 | 016 |
| BLADE | 18 | OUTLINE | 4 | 4 | 1 | 4 | | 4 | 4 | 4 | 1 | | 4 | 1 | 4 | 4 | 4 |
| | 19–20 | CURVATURE mm | 11 | 22 | 11 | 21 | | 21 | 11 | 21 | 32 | | 42 | 00 | 22 | 32 | 21 |
| | 21 | TRANSVERSE | 6 | 6 | 4 | 4 | | 6 | 4 | 6 | 6 | | 4 | 6 | 6 | 4 | 6 |
| | 22 | LONGITUDINAL | 3 | 4 | 3 | 3 | | 4 | 4 | 4 | 4 | | 0 | 0 | 0 | 8 | 3 |
| | 23 | SYMMETRY | 0 | 0 | 0 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 |
| | 24 | EDGE FORM | 1 | 1 | 1 | 4 | | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | 4 | 4 |
| | 25–26 | LENGTH mm | 31 | 32 | 26 | 40 | | 23 | 41 | 31 | 27 | | 29 | 31 | 31 | 28 | 18 |
| | 27 | S. PLACEMENT | 5 | 1 | 1 | 1 | | 0 | 4 | 4 | 0 | | 0 | 0 | 0 | 1 | 0 |
| | 28 | PATTERN | 2 | 2 | 2 | 2 | | 0 | 0 | 2 | 0 | | 0 | 0 | 0 | 2 | 0 |
| | 29 | HUMP | 0 | 0 | 0 | 0 | | 1 | 0 | 0 | 1 | | 0 | 1 | 0 | 0 | 1 |
| BASE | 30–31 | OUTLINE | 24 | 15 | 15 | 24 | | 22 | 05 | 12 | 11 | | 06 | 14 | 01 | 06 | 01 |
| | 32 | CURVATURE | 4 | 3 | 3 | 3 | | 2 | 1 | 1 | 3 | | 2 | 4 | 0 | 1 | 0 |
| | 33 | SYMMETRY | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 0 | 1 |
| | 34 | S. PLACEMENT | 0 | 3 | 3 | 3 | | 0 | 3 | 3 | 0 | | 0 | 0 | 3 | 0 | 0 |
| | 35 | PATTERN | 0 | 2 | 2 | 2 | | 0 | 2 | 2 | 0 | | 0 | 0 | 2 | 0 | 0 |
| | 36 | EDGE FORM | 1 | 1 | 1 | 1 | | 3 | 3 | 2 | 3 | | 1 | 3 | 3 | 3 | 3 |
| | 37–38 | WIDTH | 23 | 21 | 24 | 25 | | 24 | 27 | 16 | 26 | | 20 | 25 | 21 | 17 | 18 |
| HAFT | 39 | JUNCTURE | | | | | | | | | | | | | | | |
| | 40 | EDGE FORM | | | | | | | | | | | | | | | |
| | 41–42 | DIST. - PROX. LENGTH mm | | | | | | | | | | | | | | | |
| | 43 | MEDIAL DEPTH | | | | | | | | | | | | | | | |
| | 44–45 | DIST. - DIST. WIDTH mm | | | | | | | | | | | | | | | |
| | 46–47 | MED. - MED. WIDTH mm | | | | | | | | | | | | | | | |
| SHOULDER | 48–49 | SH. - BLADE OUTLINE | | | | | | | | | | | | | | | |
| | 50–52 | SH. - HAFT OUTLINE | | | | | | | | | | | | | | | |
| | 53 | ANGLE | | | | | | | | | | | | | | | |
| TANG | 54 | OUTLINE | | | | | | | | | | | | | | | |
| | 55–56 | LENGTH mm | | | | | | | | | | | | | | | |
| SYMMETRY | 57 | BILATERAL | 0 | 0 | 0 | 0 | | 1 | 1 | 1 | 1 | | 0 | 1 | 1 | 1 | 1 |
| | 58 | MATERIAL | 4 | 3 | 2 | 2 | | 3 | 3 | 4 | 2 | | 2 | 4 | 4 | 4 | 4 |
| PROVENIENCE | 59–64 | PIT | E35500 | W00510 | E05505 | W40505 | | E30510 | W30505 | E30500 | E30500 | W10515 | W25515 | E05505 | E20595 | E15500 | W20510 |
| | 65–70 | DEPTH (INCHES) | 010015 | 042045 | 040 | | | 010015 | 000005 | 005010 | 005010 | 064066 | 072080 | 039043 | 072 | 049061 | 078084 |
| | 71–73 | EXCAVATION LEVEL | | | | L B | | | | | | | | | | | |
| | 74–75 | PROFILE LEVEL | | | | | | | | | | | | | | | |
| | 76–78 | MASTER LEVEL | B02 | B02 | B02 | B02 | | B02 | A01 | B02 | B02 | E03 | E03 | B02 | B02 | B02 | E04 |
| TYPE | 79–80 | TYPE | 40 | 40 | 40 | 40 | | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |

| Group | Field | Col. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION | PSU ACCESSION NUMBER | 01–04 | | | | | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 | A661 |
| | ARTIFACT NUMBER | 05–08 | | | | | 6732 | 5759 | 5758 | 5693 | 2985 | 2740 | 2693 | 2629 | 2602 | 1764 | 1763 |
| DIMENSIONS | LENGTH mm | 09–10 | | | | | | 23 | 26 | 24 | 29 | 41 | 29 | 23 | 30 | 23 | 30 |
| | WIDTH | 11–12 | | | | | | 16 | 17 | 14 | 23 | 23 | 23 | 20 | 20 | 14 | 20 |
| | THICKNESS mm | 13–14 | | | | | | 05 | 05 | 07 | 09 | 08 | 10 | 05 | 07 | 05 | 07 |
| | WEIGHT (EST.) gm | 15–17 | | | | | | 001 | 001 | 020 | 042 | 072 | 046 | 016 | 036 | 016 | 031 |
| BLADE | OUTLINE | 18 | | | | | | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 4 | 4 | 3 |
| | CURVATURE mm | 19–20 | | | | | | 32 | 11 | 43 | 42 | 33 | 52 | 00 | 42 | 22 | 32 |
| | TRANSVERSE | 21 | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 4 | 6 | 4 |
| | LONGITUDINAL | 22 | | | | | | 0 | 4 | 4 | 4 | 0 | 4 | 3 | 0 | 4 | 0 |
| | SYMMETRY | 23 | | | | | | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| | EDGE FORM | 24 | | | | | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | LENGTH mm | 25–26 | | | | | | 22 | 27 | 24 | 29 | 35 | 32 | 26 | 29 | 24 | 30 |
| | S. PLACEMENT | 27 | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | PATTERN | 28 | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | HUMP | 29 | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| BASE | OUTLINE | 30–31 | | | | | | 01 | 12 | 11 | 01 | 07 | 14 | 01 | 06 | 12 | 01 |
| | CURVATURE | 32 | | | | | | 0 | 1 | 1 | 0 | 6 | 3 | 1 | 2 | 1 | 0 |
| | SYMMETRY | 33 | | | | | | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| | S. PLACEMENT | 34 | | | | | | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | PATTERN | 35 | | | | | | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | EDGE FORM | 36 | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 3 |
| | WIDTH | 37–38 | | | | | | 16 | 17 | 10 | 22 | 22 | 21 | 20 | 20 | 14 | 19 |
| HAFT | JUNCTURE | 39 | | | | | | | | | | | | | | | |
| | EDGE FORM | 40 | | | | | | | | | | | | | | | |
| | DIST. - PROX. LENGTH mm | 41–42 | | | | | | | | | | | | | | | |
| | MEDIAL DEPTH | 43 | | | | | | | | | | | | | | | |
| | DIST. - DIST. WIDTH mm | 44–45 | | | | | | | | | | | | | | | |
| | MED. - MED. WIDTH mm | 46–47 | | | | | | | | | | | | | | | |
| SHOULDER | SH. - BLADE OUTLINE | 48–49 | | | | | | | | | | | | | | | |
| | SH. - HAFT OUTLINE | 50–52 | | | | | | | | | | | | | | | |
| | ANGLE | 53 | | | | | | | | | | | | | | | |
| TANG | OUTLINE | 54 | | | | | | | | | | | | | | | |
| | LENGTH mm | 55–56 | | | | | | | | | | | | | | | |
| SYMMETRY | BILATERAL | 57 | | | | | | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| | MATERIAL | 58 | | | | | | 4 | 7 | 4 | 4 | 9 | 9 | 4 | 2 | 3 | 4 |
| PROVENIENCE | PIT | 59–64 | | | | | W25S00 | E25S05 | E25S05 | | W40S15 | W40S15 | W20S30 | W05S15 | | W15S15 | W25S15 |
| | DEPTH (INCHES) | 65–70 | | | | | 072078 | 060 | 060 | | 035. | 044057 | 108 | 048058 | | 054060 | 072080 |
| | EXCAVATION LEVEL | 71–73 | | | | | | | | | | | | | | | |
| | PROFILE LEVEL | 74–75 | | | | | | | | | | 00 | | 03 | | | |
| | MASTER LEVEL | 76–78 | | | | | P03 | B02 | B02 | | 003 | 03 | H00 | 03 | | C02 | E03 |
| TYPE | TYPE | 79–80 | | | | | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |

Appendix C

# SUMMARY POINT CLASSIFICATION AND DESCRIPTION

This appendix presents a summary by type and attribute class of the data provided in Appendix B. It gives the ranges of properties within each attribute class for all types. Inherent type variability with respect to some attribute classes has necessitated the use of a shorthand method of notation for handling some kinds of data. For example, where more than one base form or haft template characterize a type it would be of interest to know whether these are predominantly related and which among them is the most frequently represented. A symbol notation which will accommodate these as well as other kinds of observations is incorporated within the body of the table and is used as defined below. All other symbols are applied as defined in Appendix A.

Symbol Identification

/ used to separate measurements (in millimeters) of the curvature of the two lateral edges of the blade; also used where more than one attribute of a particular class is represented.

\- used with metrical attributes to indicate range.

_ indicates the predominance of a particular attribute within its class. If two members are underlined codominance is understood.

V means "Variable": more than three attributes within a class are represented.

r used to indicate that the attributes of a single class are predominantly related in form. For example: subconvex bases are considered to be related regardless of whether or not they are biterminally-curvate.

u used to indicate that the attributes of a single class are predominantly unrelated in form. For example: straight and convex bases are considered to be unrelated regardless of whether or not they are biterminally-curvate.

( ) used in conjunction with V to indicate which attributes, if any, predominate when more than three from the same class are represented.

The appendix is structured according to the following format:

| | | |
|---|---|---|
| L | Length (mm) | DIMENSIONS |
| W | Width (mm) | |
| T | Thickness (mm) | |
| Wt | Weight (gm) | |
| O | Outline | BLADE |
| C | Curvature (mm) | |
| T | Transverse Section | |
| L | Longitudinal Section | |
| S | Symmetry | |
| E | Edge Form | |
| L | Length (mm) | |
| SP | Secondary Placement | |
| P | Secondary Pattern | |
| H | Hump | |
| O | Outline | BASE |
| C | Curvature | |
| S | Symmetry | |
| SP | Secondary Placement | |
| P | Secondary Pattern | |
| E | Edge Form | |
| W | Width (mm) | |
| J | Juncture | HAFT |
| E | Edge Form | |
| DP | Distal-Proximal Length (mm) | |
| M | Medial Depth (mm) | |
| DD | Distal-Distal Width (mm) | |
| MM | Medial-Medial Width (mm) | |
| SB | Shoulder-Blade Outline | SHOULDER |
| SH | Shoulder-Haft Outline | |
| A | Angle | |
| O | Outline | TANG |
| L | Length (mm) | |
| BS | Bilateral Symmetry | |
| M | Material | |
| SS | Sample Size | |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| L | 46-51 | 41-63 | 52-56 | 34-37 | 29-34 | 39 | 24 |
| W | 26-31 | 22-25 | 24-31 | 19-23 | 20-22 | 21 | 22 |
| T | 7-10 | 8-9 | 6-7 | 7-8 | 7 | 8 | 5 |
| Wt | 9.1-12.2 | ? | ? | ? | 4.2-4.4 | 5.7 | 2.2 |
| O | 4 | 2-4 | 4 | 4 | 9 | 4 | 4 |
| C | 3/5-3/7 | 3/3-3/4 | 3/3-4/5 | 2/1 | 3/3 | 3/2 | 2/2 |
| T | 6 | 6 | 6 | 6 | 4 | 6 | 4 |
| L | 0/4 | 0/4 | 0/4 | 0/4 | 0 | 4 | 3 |
| S | 1 | 0/1 | 0/1 | 0 | 0/1 | 1 | 0 |
| E | 1 | 4 | 0/4 | 4 | 2/4 | 4 | 1 |
| L | 29-39 | 35-49 | 41-63 | 25-42 | 19-22 | 33 | 15 |
| SP | 0/1 | 0 | 0 | 0 | 0 | 0 | |
| P | 0/1 | 0 | 0 | 0 | 0 | 0 | |
| H | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| O | 5/7 | 5/12 | 2 | 12 | 2 | 1 | 27 |
| C | 3-5 | 1 | 0-2 | 1-2 | 2-3 | 0 | 1 |
| S | 0/1 | 0/1 | 0 | 0/1 | 0 | 1 | 0 |
| SP | 0/2 | 0 | 0 | 0 | 2 | 0 | |
| P | 0/1 | 0 | 0 | 0 | 2 | 0 | |
| E | 2/2 | 3 | 1/2 | 2 | 1/3 | 2 | 1 |
| W | 22-26 | 11-12 | 16-19 | 19-20 | 17-19 | 21 | 15 |
| J | 3/3 | 2 | 4 | 1 | 4 | 3 | |
| E | 3/1 | 1-3 | 1-3 | 1-2 | 3 | 2 | 3 |
| DP | 9-11 | 15-17 | 9 | 7-8 | 8-10 | 11 | 8 |
| M | 4-5 | 2-3 | 4 | 2-3 | 2-3 | 3 | 1-2 |
| DD | 23-29 | 20-24 | 22-30 | 18-22 | 18-22 | 19 | 22 |
| MM | 14-18 | 11-12 | 12-17 | 14-16 | 14 | 15 | 15 |
| SB | 15/22 | 21/24 | 16 | 12/22 | 10/24 | 12 | |
| SH | 77 | 34 | 58 | 64/82 | 64/83 | 84 | |
| A | 1/2 | 3 | 2 | 3 | 3 | 3 | 3 |
| O | 2 | 4 | 3 | 3 | 2/3 | 3 | 3 |
| L | 9-15 | 11-14 | 8-9 | 10-11 | 10-11 | 11 | 9 |
| BS | 1/0 | 1 | 0/1 | 1 | 1 | 2 | 1 |
| M | 4 | 5 | 4 | 4 | 4 | 8 | 5 |
| SS | 2 | 2 | 2 | 2 | 2 | 1 | 1 |

| | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|
| L | 26-42 | 25 | 30 | 74 | 42 | 26-46 | 32-34 |
| W | 20-26 | 17 | 18 | 39 | 26 | 14-20 | 21-22 |
| T | 4-8 | 5 | 6 | 12 | 7 | 4-8 | 9-11 |
| Wt | 3.4-7.2 | 1.9 | 2.8 | 27.7 | 8.2 | 1.8-5.6 | 6.4 |
| O | 1/2/4 | 1 | 4 | 4 | 4 | 1/4 | 4 |
| C | 1/1-4/4 | 0/1 | 2/2 | 5/5 | 3/3 | 0/1-2/3 | 3/3-3/5 |
| T | 4/6 | 6 | 4 | 6 | 6 | 3/4/6 | 6 |
| L | o/3/4 | 0 | 0 | 0 | 1 | 0/3/5 | 3/4 |
| S | 0/1 | 0 | 1 | 0 | 1 | 0/1 | 1 |
| E | 1/2/4 | 4 | 4 | 4 | 4 | 1/4 | 1 |
| L | 19-30 | 15 | 21 | 57 | 29 | 22-35 | 22-29 |
| S | 0/1 | 0 | 1 | 1 | 1 | V | 5 |
| P | 0/1/2 | 0 | 2 | 3 | 2 | 0/1/2 | 2 |
| H | 0 | 0 | 0 | 0 | 0 | 0/1 | 0/1 |
| O | 2/5/6 | 5 | 11 | 3 | 7 | V r | 14 |
| C | 0-3 | 2 | 1 | 0 | 4 | 0-3 | 2-3 |
| S | 0 | 0 | 1 | 0 | 0 | 0/1 | 1 |
| SP | 0/2/3 | 3 | 2 | 3 | 2 | 0/2 | 0/2 |
| P | 0/2 | 2 | 2 | 2 | 2 | 0/2 | 0/2 |
| E | 1/2/3 | 2 | 1 | 2 | 2 | 1/3 | 2/3 |
| W | 16-23 | 18 | 14 | 28 | 21 | 15-20 | 17-19 |
| J | 4 | 3 | 4 | 4 | 4 | 1/2/4 | 4 |
| E | 1/3 | 1 | 1 | 1 | 1 | 1/2/3 | 1/2 |
| DP | 5-10 | 7 | 9 | 14 | 10 | 3-10 | 10-11 |
| M | 2-3 | 2 | 1-2 | 6 | 3 | 1-2 | 2-4 |
| DD | 17-26 | 17 | 18 | 36 | 23 | 14-21 | 20-21 |
| MM | 12-20 | 14 | 13 | 21 | 15 | 11-22 | 12-15 |
| SB | V r | 12 | 24 | 1 | 10 | V r | 12/24 |
| SH | V u | 83 | 66 | 65 | 65 | 64/83 | 83/84 |
| A | 1/2/3 | 3 | 3 | 3 | 3 | 3 | 3 |
| O | 1/2/3 | 2 | 3 | 1 | 2 | 1/2 | 2/3 |
| L | 6-11 | 9 | 8 | 16 | 17 | 5-22 | 12 |
| BS | 0/1 | 0 | 1 | 1 | 0 | 0/1 | 1 |
| M | 4 | 4 | 4 | 4 | 5 | 3/4 | 4 |
| SS | 9 | 1 | 1 | 1 | 1 | 7 | 2 |

| | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|
| L | 34-78 | 35-59 | 43-58 | 32-53 | 105-120+ | 57 | 33-59 |
| W | 27-30 | 15-36 | 27-35 | 19-20 | 27-31 | 41 | 15-29 |
| T | 9-10 | 6-11 | 9-11 | 7 | 8 | 10 | 4-8 |
| Wt | 8.8-21.2 | 2.5 | 8.7-19.4 | 4.0-7.9 | ? | 18.0 | 2.2-8.4 |
| O | 1/4 | 4 | 4 | 1/4 | 4 | 8 | 4/9 |
| C | 1/1-4/6 | 1/1-2/3 | 1/2-4/4 | 1/2-3/4 | 3/5-5/6 | 2/3 | 1/2-3/4 |
| T | 4/6 | 4/6 | 4/6 | 4/6 | 6 | 4 | 4/6 |
| L | 4 | 0/3 | 0/3/8 | 0/3 | 0/4 | 3 | V r |
| S | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 1 | 0/1 |
| E | 4 | 4 | 0/1/4 | 2/4 | 1/4 | 4 | 2/4 |
| L | 25-65 | 25-37 | 31-43 | 23-42 | 62-76 | 35 | 23-64 |
| S | 0 | 0 | 0 | 0/4 | 0 | 0 | 0/1/3 |
| P | 0 | 0 | 0 | 0/2 | 0 | 0 | 0/1/2 |
| H | 0/1 | 0/1 | 1 | 0 | 0/1 | 1 | 0/1 |
| O | 1/2 | 1/2 | 1/2/7 | 11/12 | 11/12 | 12 | V r |
| C | 0 | 0-1 | 0-3 | 0-1 | 1 | 2 | 0-2 |
| S | 0/1 | 0 | 0 | 0/1 | 2 | 0 | 0/1 |
| SP | 0/2 | 0 | 0 | 2 | 0/2 | 0 | 0/2 |
| P | 0/2 | 0 | 0 | 2 | 0/2 | 0 | 0/1 |
| E | 2/3 | 2 | 3 | 2 | 1 | 2 | 1/3 |
| W | 26-29 | 11-18 | 9-15 | 14-15 | 20-22 | 31 | 9-18 |
| J | 3 | 2 | 2 | 2 | 2/4 | 2 | 2/4 |
| E | 1 | 2 | 1/3 | 2 | 1/3 | 2 | 1 |
| DP | 11-14 | 11-15 | 13-26 | 9-13 | 13-15 | 24 | 8-18 |
| M | 1-2 | 0-2 | 2 | 2 | 3-4 | 6 | 1-3 |
| DD | 26-28 | 15-35 | 27-34 | 18-19 | 27-28 | 40 | 14-29 |
| MM | 22-26 | 11-18 | 15-18 | 13-14 | 17-18 | 24 | 9-17 |
| SB | 9/12/24 | 12/22 | 12/24 | 9/23 | 1/9 | 22 | 7/24 |
| SH | 82/83 | 0/22 | 32/35 | 83/100 | 58/82 | 64 | 23/64/83 |
| A | 3 | 3 | 3 | 3 | 2/3 | 3 | 3 |
| O | 1/2/3 | 4/5 | 5 | 2/3 | 3 | 3 | V u |
| L | 10-15 | 11-21 | 12-18 | 10-13 | 13-14 | 22 | 9-17 |
| BS | 0/1 | 0/1 | 0/1 | 1 | 1 | 0 | 1 |
| M | 4 | 4/6 | 4 | 4 | 4 | 4 | 4 |
| SS | 3 | 2 | 3 | 2 | 2 | 1 | 6 |

| | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|
| L | 39-48 | 42-52 | 37-64 | 41-53 | 34-45 | 43-44 | 58 |
| W | 16-22 | 23-28 | 24-28 | 27-33 | 19-22 | 19-22 | 35 |
| T | 7-10 | 7-9 | 8-10 | 8 | 3-5 | 7 | 8 |
| Wt | 5.3-7.6 | 6.9-13.1 | 7.0 | 7.5 | 2.9-4.3 | ? | 14.4 |
| O | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| C | 1/4-3/3 | 2/3-4/4 | 2/3 | 3/4-3/5 | 1/1-3/3 | 2/2-3/3 | 2/3 |
| T | 6/8 | 6 | 6 | 4/6 | 1/3/6 | 4/6 | 6 |
| L | 3.4 | 0/7 | 0 | 0/4 | 3/5 | 0/4 | 4 |
| S | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0 | 0 |
| E | 4 | 1/4 | 4 | 4 | 4 | 4 | 2 |
| L | 27-37 | 32-43 | 24-51 | 29-41 | 31-37 | 41-43 | 45 |
| S | 0/1 | 0/1/3 | 0/1 | 0 | 0/3 | 0 | 1 |
| P | 0/2 | 0/2 | 0/1 | 0 | 0/2 | 0 | 2 |
| H | 0/1 | 0 | 0/1 | 0/1 | 0 | 0 | 0 |
| O | V u | 2/6 | 1/5 | 1/12 | 2/5/6 | 26 | 14 |
| C | 0-3 | 0-3 | 0-1 | 0-1 | 0-1 | 0-1 | 3 |
| S | 0/1 | 0 | 0 | 0/1 | 0/1 | 1 | 0 |
| SP | 0/2 | 0/2 | 0/3 | 0/2 | 0 | 0 | 0 |
| P | 0/2 | 0/2 | 0/2 | 0/2 | 0 | 0 | 0 |
| E | 0/1/2 | 1/2/3 | 1 | 2 | 3 | 3 | 2 |
| W | 13-19 | 18-19 | 17-18 | 16-19 | 16-21 | 19 | 23 |
| J | 2/4 | 4/5 | 2 | 2/4 | 1 | 1 | 4 |
| E | 1/2/3 | 1 | 1 | 1 | 1/3 | 1/3 | 2 |
| DP | 10-13 | 8-11 | 13-14 | 13-16 | 6-7 | 6-11 | 19 |
| M | 2-3 | 3 | 3 | 4-6 | 1-2 | 1-2 | 4 |
| DD | 16-21 | 23-28 | 25-27 | 26-33 | 18-22 | 18-21 | 35 |
| MM | 11-14 | 15-17 | 16 | 13-15 | 14-17 | 14-17 | 19 |
| SB | 17/24 | 5/10/24 | 24 | 13/76 | 7/9/23 | 9/12 | 22 |
| SH | V u | 64/83/95 | 34 | 5/17 | 65/83/101 | 83 | 64 |
| A | 2/3 | 2/3 | 3 | 2 | 3 | 3 | 3 |
| O | 2/3/4 | 2/3 | 4 | 2 | 1/2/7 | 1 | 3 |
| L | 9-13 | 7-12 | 13 | 12-13 | 4-12 | 9-11 | 18 |
| BS | 1 | 0/1 | 0/1 | 0 | 0/1 | 1 | 0 |
| M | 4 | 4/5 | 4 | 5/9 | 4/5 | 4 | 4 |
| SS | 4 | 3 | 2 | 2 | 3 | 2 | 1 |

| | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
|---|---|---|---|---|---|---|---|
| L | 27-56 | 38-49 | 40-52 | 36 | 36-39 | 71 | 42 |
| W | 18-23 | 25-28 | 22-26 | 21 | 22-28 | 33 | 19 |
| T | 8-12 | 4-9 | 7 | 6 | 7-9 | 7 | 6 |
| Wt | 6.8-14.4 | 1.0-4.5 | 5.8-8.1 | 3.8 | ? | ? | ? |
| O | 4/8 | 2/4 | 4/8 | 4 | 1/4 | 4 | 4 |
| C̄ | 2/3-3/5 | 3/3-4/5 | 3/3-4/4 | 1/2 | 1/1-2/2 | 5/5 | 2/2 |
| T | 6 | 4/6 | 6 | 6 | 4/6 | 3 | 6 |
| L | V(0,4) | 0/2/3 | 0/4 | 3 | 0/8 | 2 | 3 |
| S | 0/1 | 0 | 0/1 | 1 | 1 | 1 | 1 |
| E | 4 | 4 | 1/2 | 4 | 1 | 4 | 1 |
| L | 28-44 | 25-37 | 30-44 | 23 | 33-38 | 62 | 26 |
| S | 0/1 | 0 | 1/2 | 0 | 1/3 | 0 | 0 |
| P | 0/2 | 0 | 1/2 | 0 | 2 | 0 | 0 |
| H | 0/1 | 0/1 | 0 | 0 | 0 | 0 | 0 |
| O | V(6) | 2/6 | 5/7 | 2 | 1/2 | 1 | 2 |
| C | 0-5 | 0-3 | 2-4 | 0 | 0-2 | 0 | 2 |
| S | 0/1 | 0 | 0 | 1 | 0/1 | 1 | 1 |
| SP | 0/2 | 0 | 3 | 0 | 0 | 0 | 0 |
| P | 0/1/2 | 0 | 2 | 0 | 0 | 0 | 0 |
| E | 1/2/3 | 1 | 3 | 1 | 1/3 | 3 | 1 |
| W | 12-21 | 15-18 | 19-20 | 17 | 12-15 | 17 | 16 |
| J | V u | 2/4 | 3/4 | 4 | 2 | 2 | 4 |
| E | 1/3/4 | 1/2 | 1 | 1 | 3 | 1 | 1 |
| DP | 9-13 | 10-15 | 5-7 | 11 | 8-12 | 12 | 14 |
| M | 1-3 | 2-4 | 3-4 | 1 | 2-3 | 5 | 3 |
| DD | 16-23 | 24-26 | 22-25 | 21 | 21-28 | 32 | 19 |
| MM | 11-16 | 14 | 13-15 | 13 | 12-17 | 17 | 10 |
| SB | 12/22/24 | 22/23 | 12/18 | 12 | 10/18 | 18 | 23 |
| SH | V u | 23/64/101 | 76/77 | 83 | 16/22 | 16 | 101 |
| A | 3 | 3 | 1/2 | 3 | 2/3 | 1 | 3 |
| O | V | 2/3 | 2 | 2 | 4 | 4 | 2 |
| L | 8-14 | 9-15 | 8-10 | 13 | 6-10 | 9 | 14 |
| BS | 0/1 | 0/1 | 0 | 1 | 1 | 1 | 1 |
| M | 4/5 | 4/6 | 3/4 | 4 | 4/5 | 4 | 4 |
| SS | 8 | 3 | 2 | 1 | 2 | 1 | 1 |

| | 36 | 37 | 38 | 39 | 40 | 41 |
|---|---|---|---|---|---|---|
| L | 25 | 18-30 | 25-33 | 14-28 | 23-36 | 17-41 |
| W | 19 | 20-25 | 20-25 | 13-19 | 21-26 | 17-26 |
| T | 4 | 4-6 | 3-4 | 3-4 | 4-5 | 5-10 |
| Wt | 2.2 | 1.0-2.2 | 1.8 | 0.6-1.2 | ? | 1.6-7.2 |
| O | 4 | 1/3/4 | 1/3/4 | 1/3/4 | 1/4 | 1/3/4 |
| C | 1/2 | 1/1-2/3 | 0/0-1/2 | 0/0-1/2 | 1/1-2/2 | 0/0-3/4 |
| T | 6 | 1/4/6 | 3/4/6 | 4/6 | 4/6 | 4/6 |
| L | 0 | V(4,0) | 2/3/4 | V(0,4) | 3/4 | V(0,4) |
| S | 0 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 |
| E | 4 | 1/4 | 1/2/4 | 1/4 | 1/4 | 4 |
| L | 17 | 21-32 | 24-36 | 16-28 | 26-40 | 18-35 |
| SP | 1 | V(1) | 0/1 | V(0) | 1/5 | 0/1/4 |
| P | 2 | 0/2 | 0/2 | 0/2 | 2 | 0/2 |
| H | 0 | 0/1 | 0 | 0/1 | 0 | 0/1 |
| O | 17 | V(12) | V(11) | V(12) | 15/24 | V u |
| C | 2 | 0-3 | 1-3 | 0-2 | 3-4 | 0-6 |
| S | 0 | 0/1 | 0/1 | 0/1 | 0 | 0/1 |
| SP | 0 | 0/2/3 | 2/3 | 0/2/3 | 0/3 | V(0) |
| P | 0 | 0/1/2 | 1/2 | 0/2 | 0/2 | 0/2 |
| E | 1 | 1/3 | 1/3 | 1/3 | 1 | 1/3 |
| W | 19 | 20-25 | 21-26 | 13-21 | 21-25 | 10-25 |
| J | 1 | | | | | |
| E | 1 | | | | | |
| DP | 5 | | | | | |
| M | 2 | | | | | |
| DD | 19 | | | | | |
| MM | 16 | | | | | |
| SB | 22 | | | | | |
| SH | 65 | | | | | |
| A | 3 | | | | | |
| O | 1 | | | | | |
| L | 7 | | | | | |
| BS | 0 | 0/1 | 0/1 | 0/1 | 0 | 0/1 |
| M | 4 | V(4) | 2/3/4 | 2/3/4 | 2/3/4 | V(4) |
| SS | 1 | 15 | 12 | 22 | 4 | 21 |

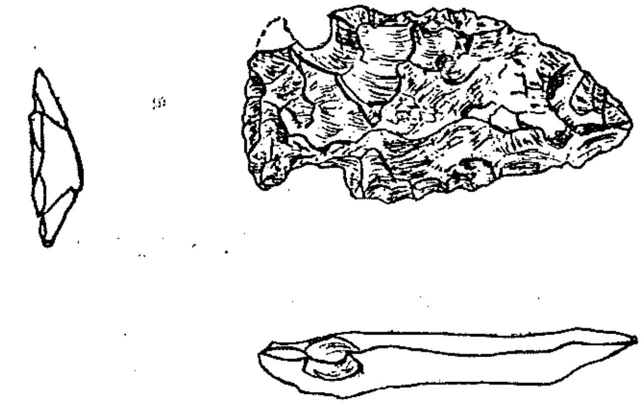
Figure 1

a. Type 1 - Kirk Corner-Notched (A66.1.3926)

b. Type 1 - Kirk Corner-Notched (A66.1.567)

Figure 1

a



Scale 1:1

b

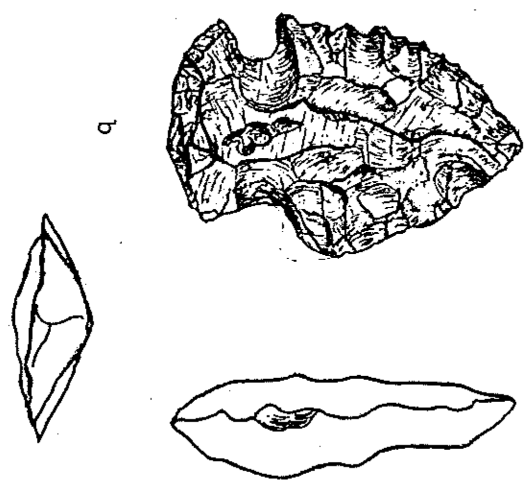


Figure 2

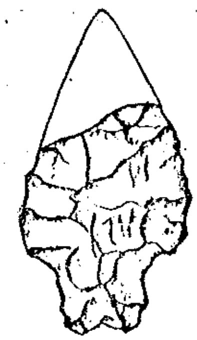
a. Type 2 (A66.1.2114)

b. Type 3 (A66.1.4927)

c. Type 4 - Halifax Side-Notched (A66.1.1681)

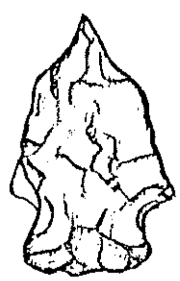
d. Type 5 (A66.1.2402)

Figure 2

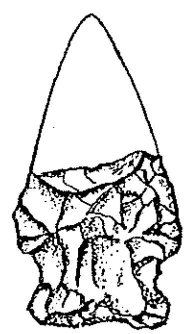


a

b



c



d

Scale 1:1

Figure 3

a. Type 6 (A66.1.2682)

b. Type 7 - Bifurcated-base Point (A66.1.6940)

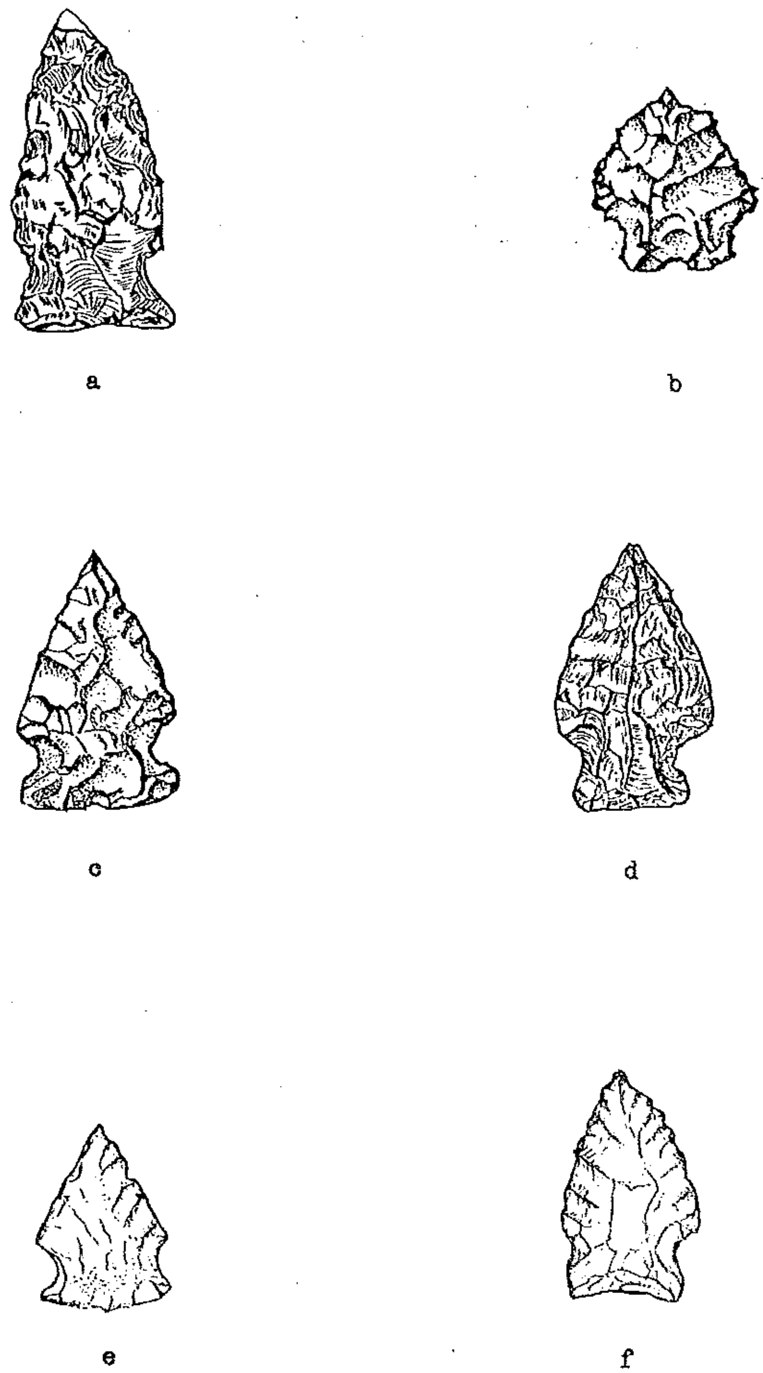
c. Type 8. Brewerton Corner-Notched Point (A66.1.1730)

d. Type 8 - Brewerton Corner-Notched Point (A66.1.1729)

e. Type 9 - Brewerton Side-Notched Point (A66.1.4438)

f. Type 10 - Brewerton Side-Notched Point (A66.1.1724)

Figure 3




Scale 1:1

Figure 4

a. Type 11 - Brewerton Corner-Notched Point (A66.1.1711)

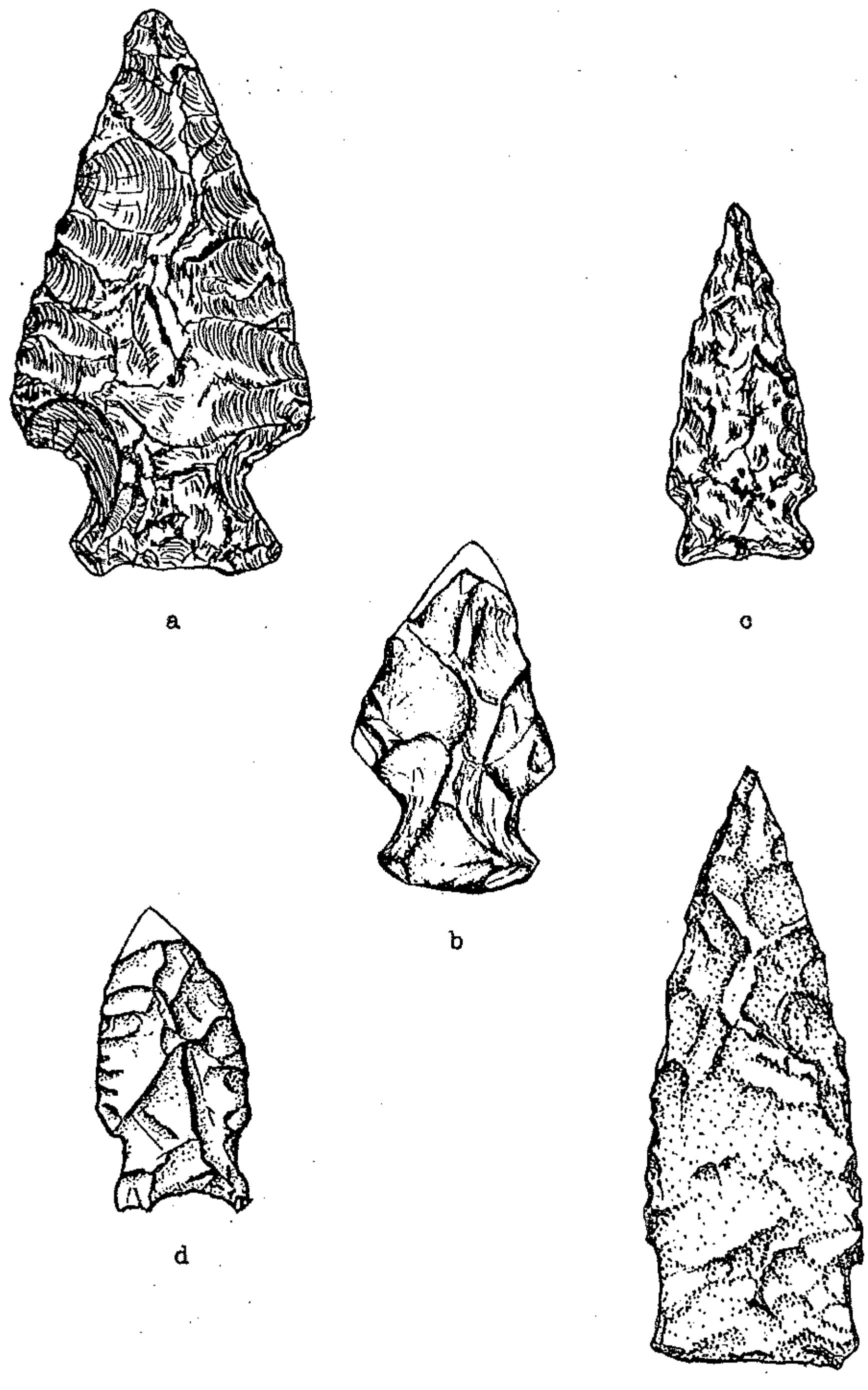
b. Type 12 - Brewerton Corner-Notched Point (A66.1.1721)

c. Type 13 - "Helgramite" Point (A66.1.4594)

d. Type 14 (A66.1.1745)

e. Type 15 (A66.1.1723)

Figure 4

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a. Type 16 (A66.1.1727)

b. Type 17 - Rossville Point (A66.1.3021)

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d. Type 19 (A66.1.1687)

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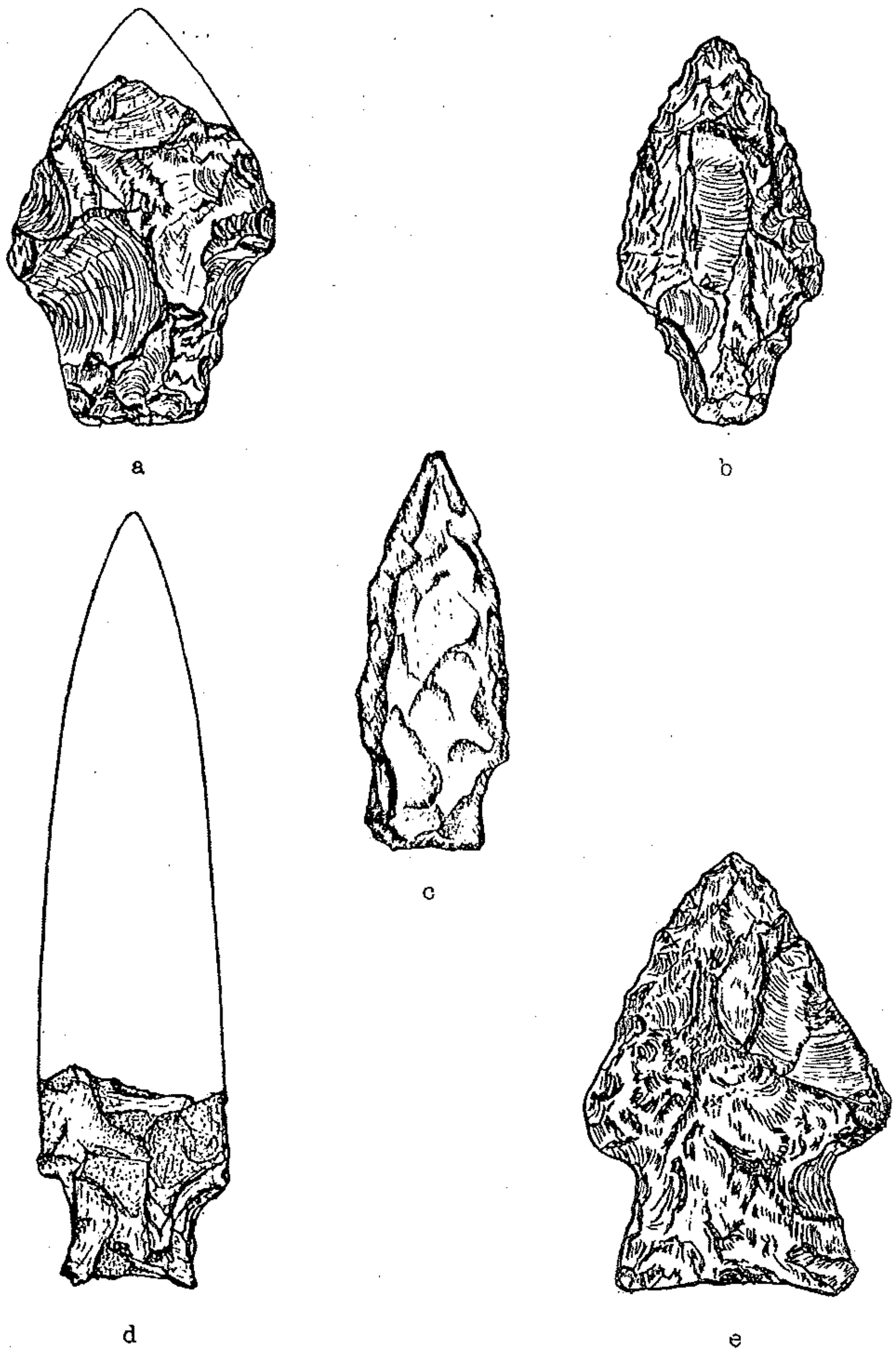


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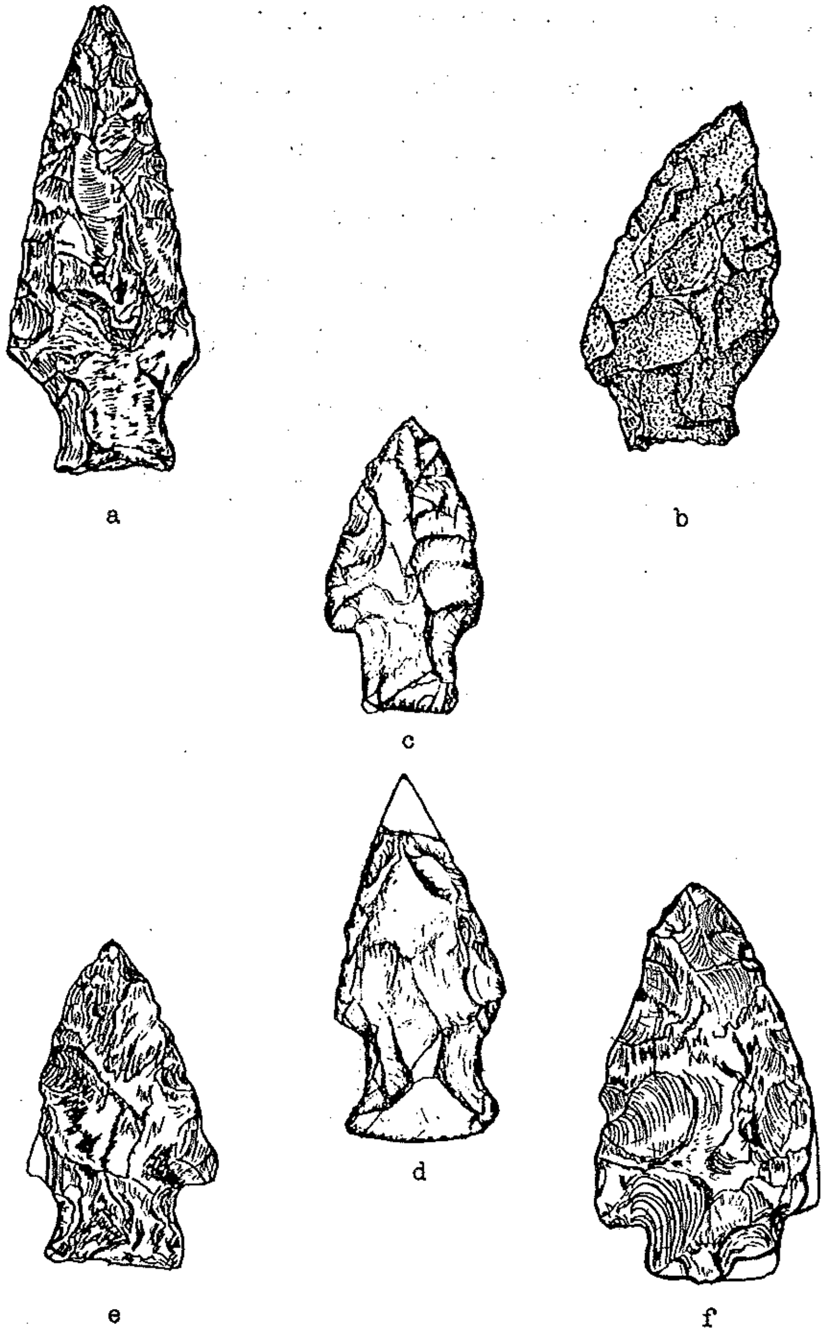


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g. Type 29 - Juniata Stemmed Point (A66.1.1726)

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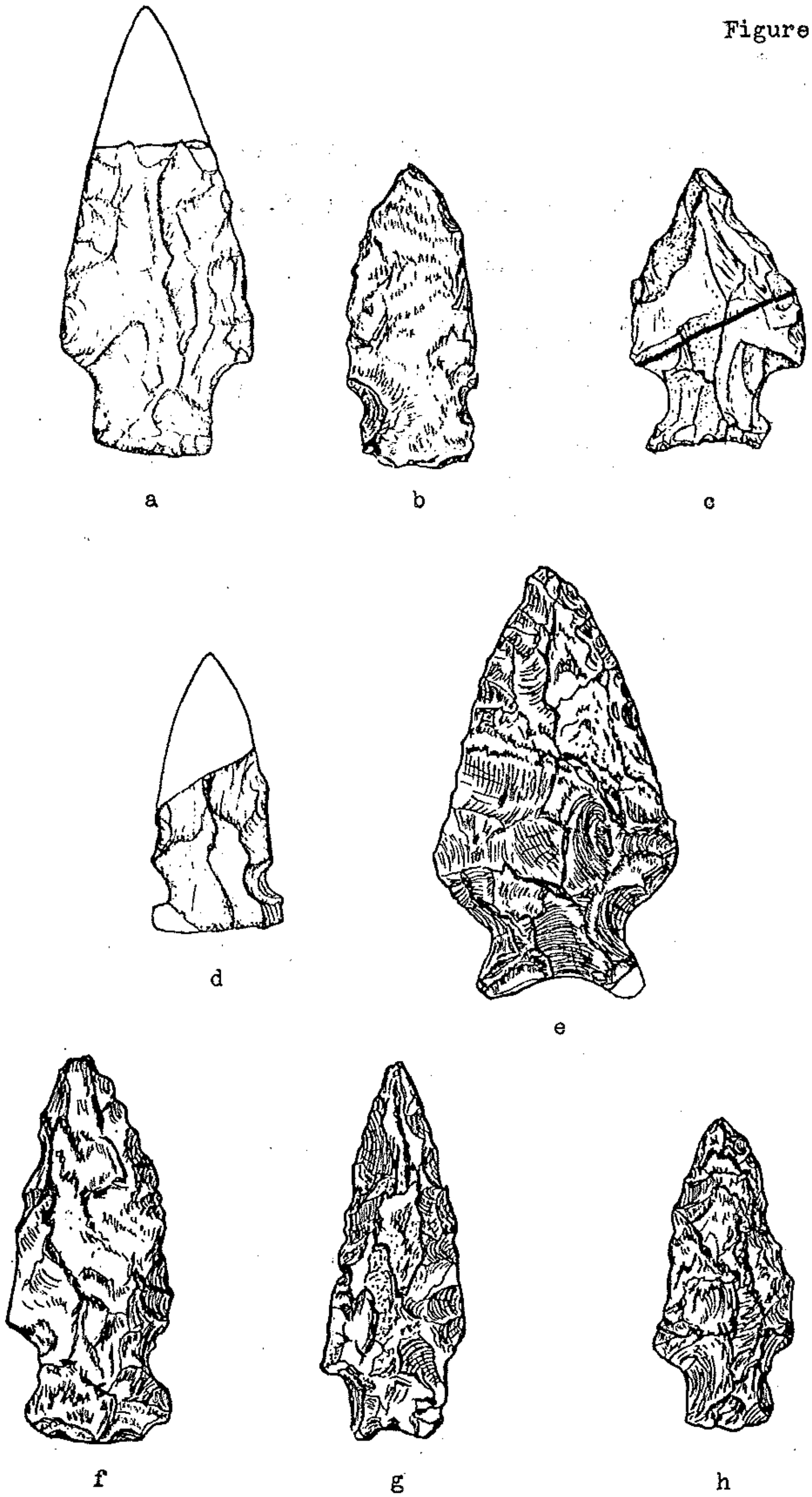


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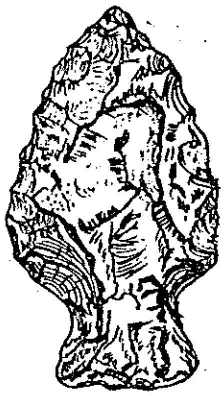

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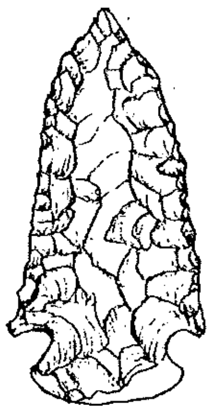

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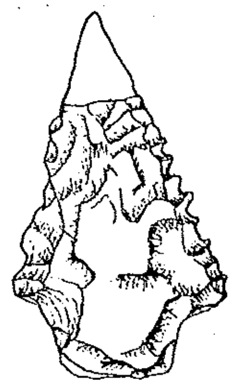

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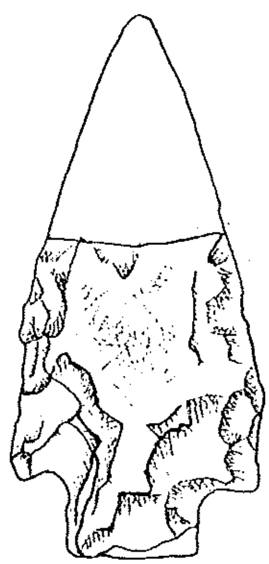

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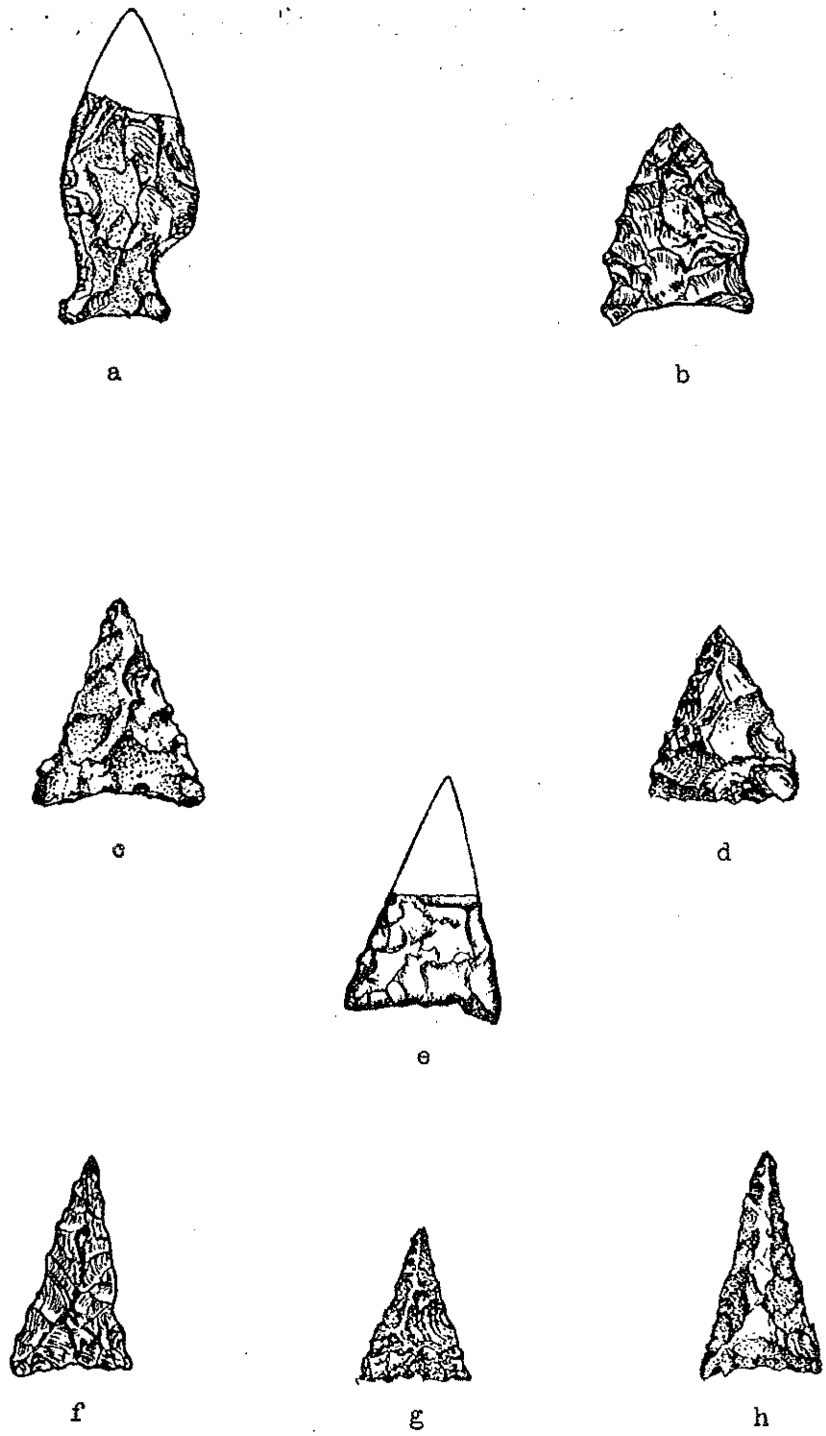


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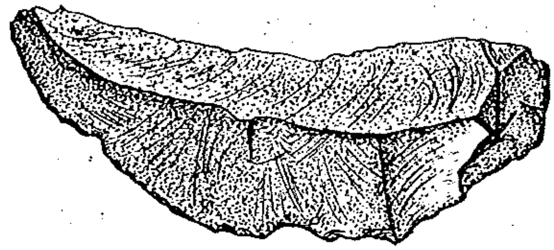

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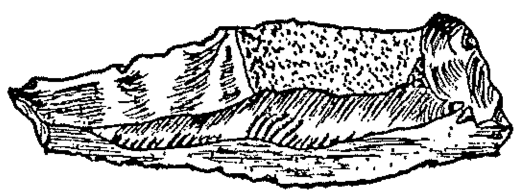

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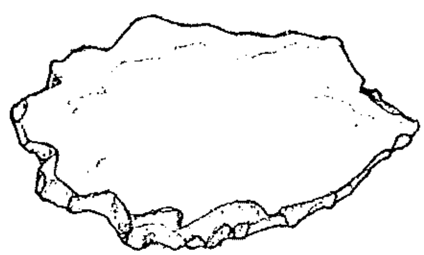

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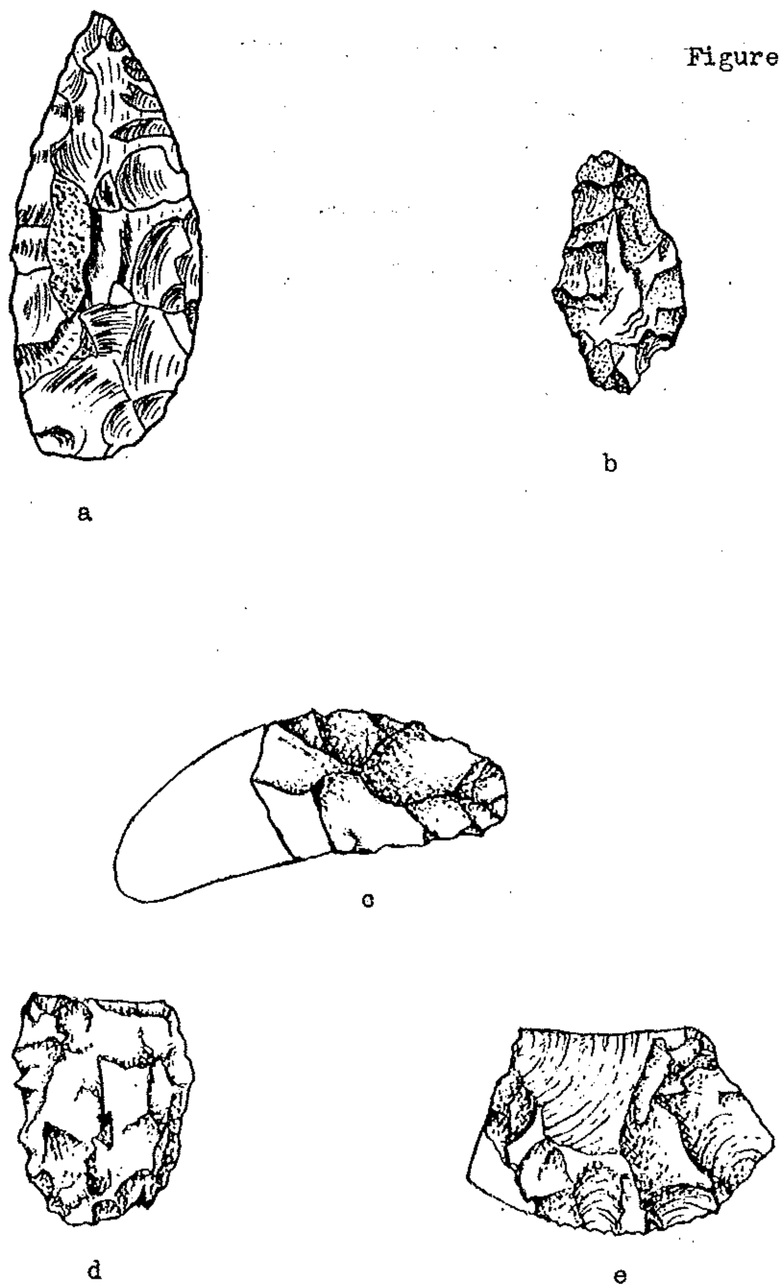


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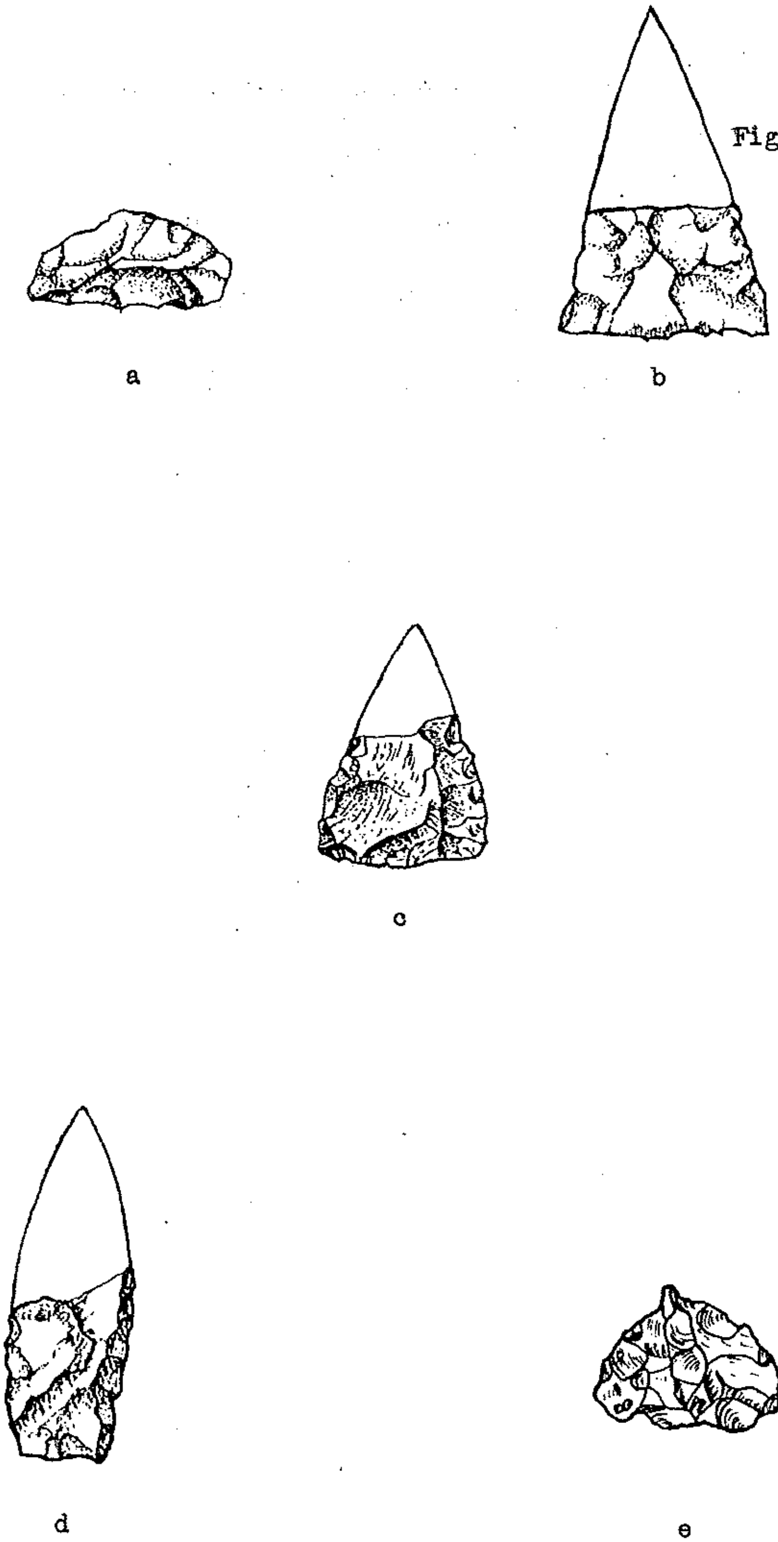


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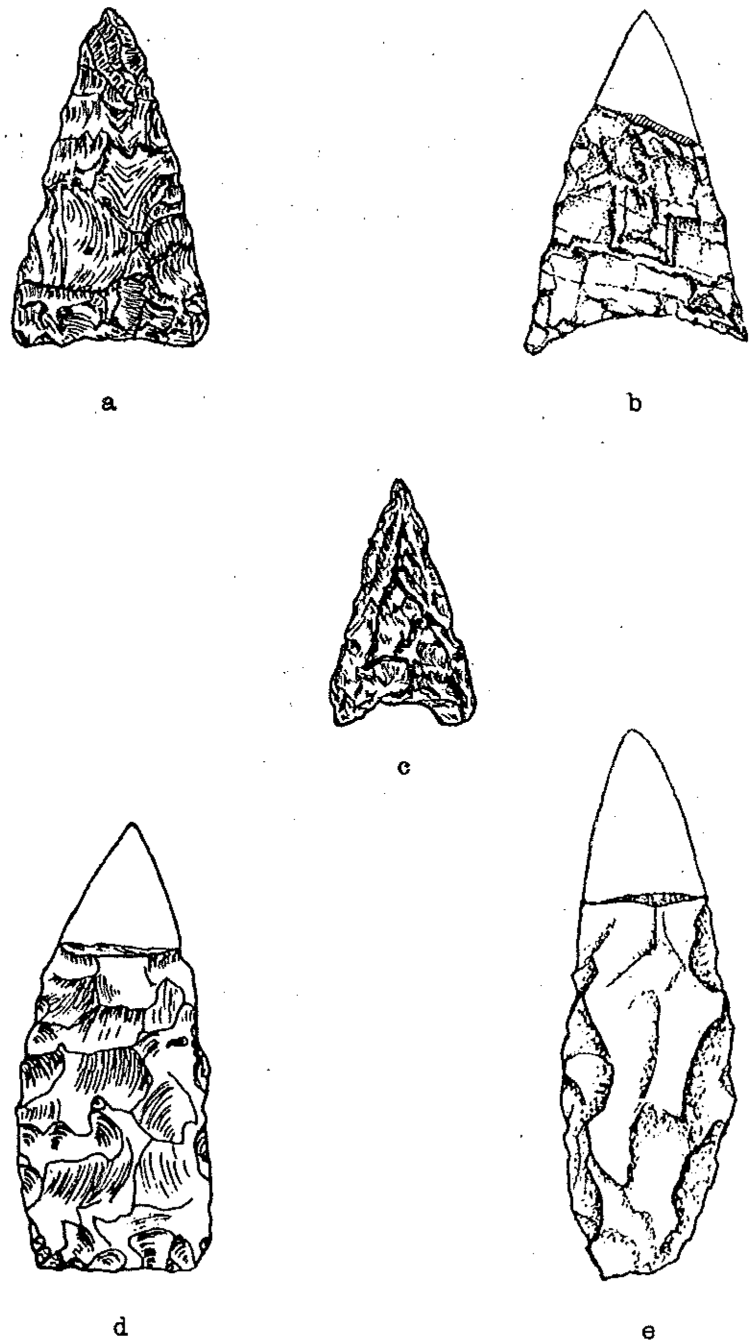


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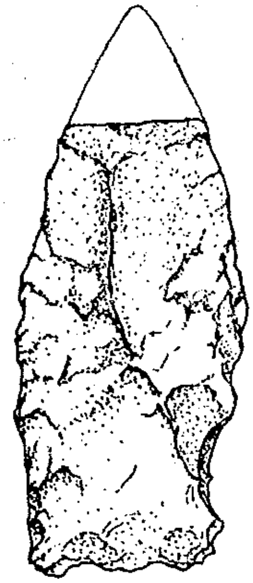

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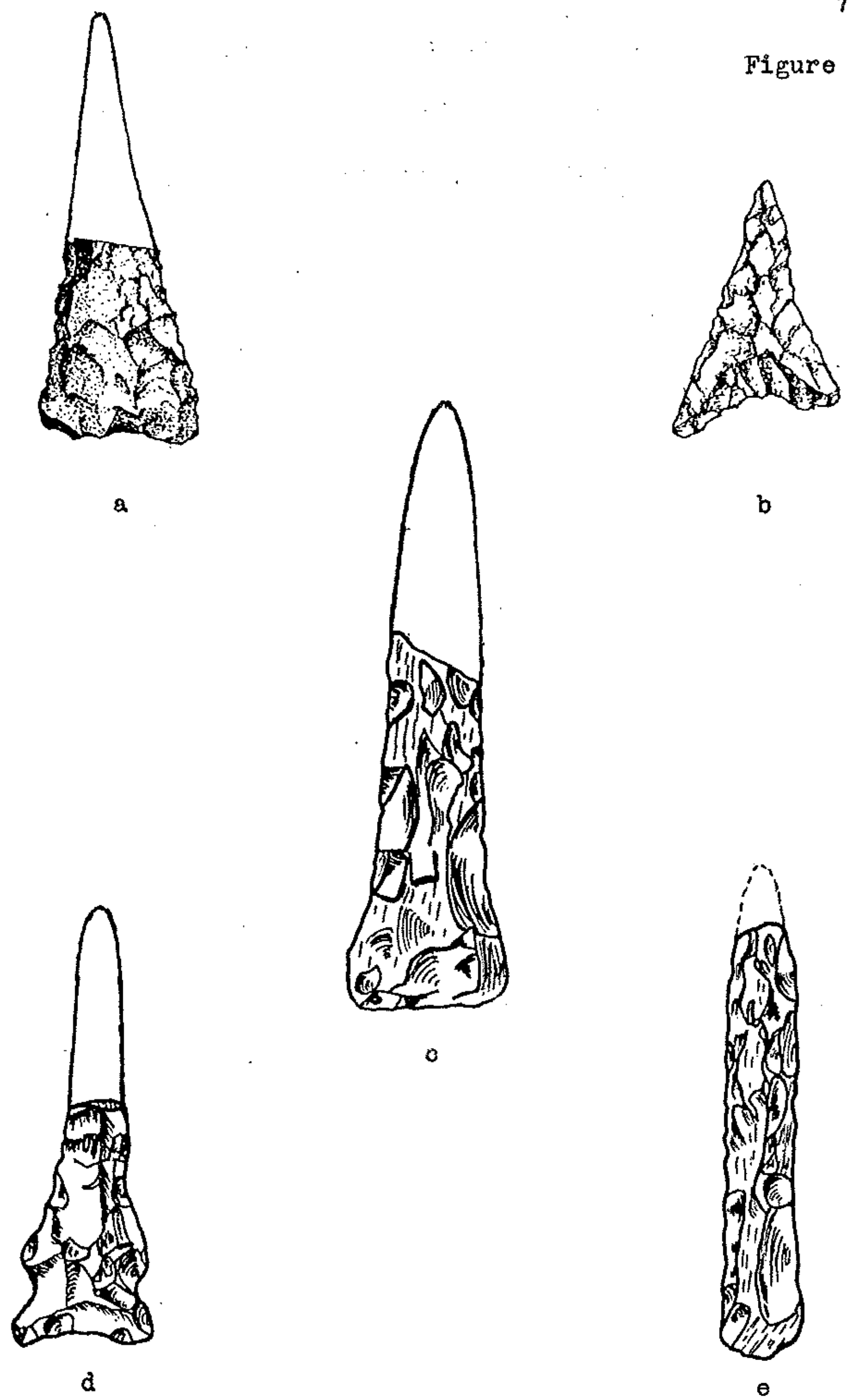


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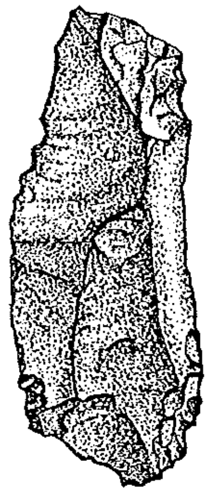

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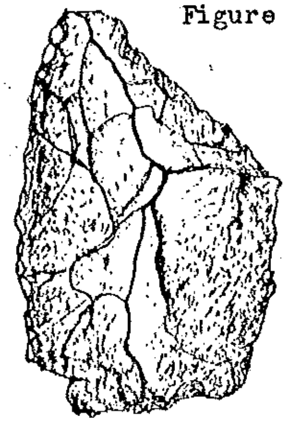

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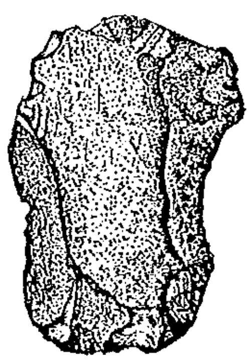

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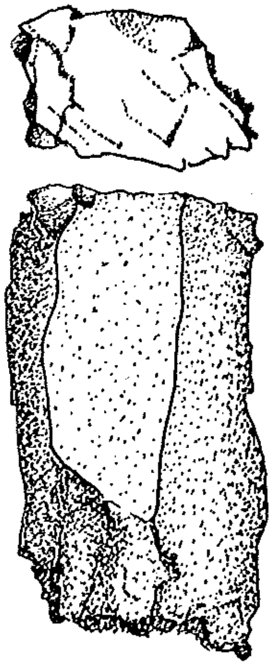

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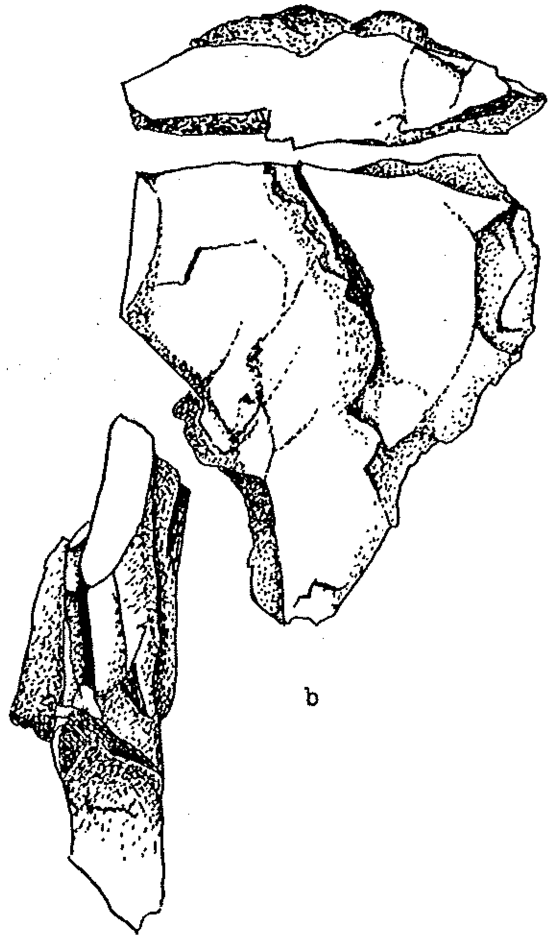

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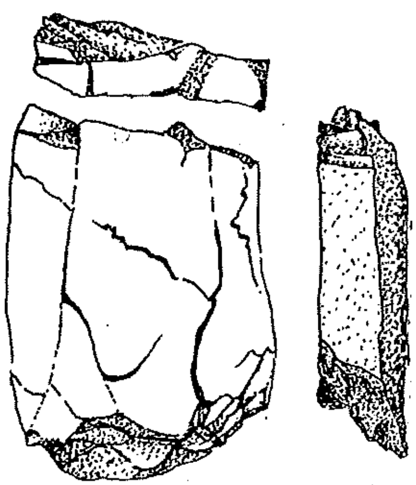

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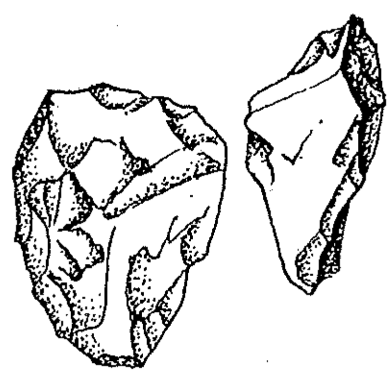

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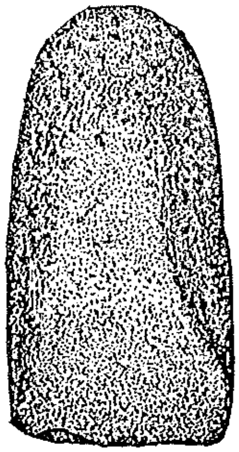

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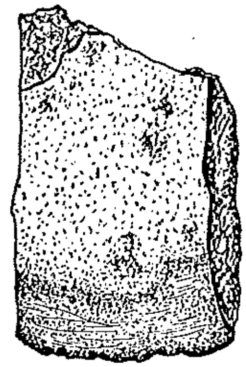

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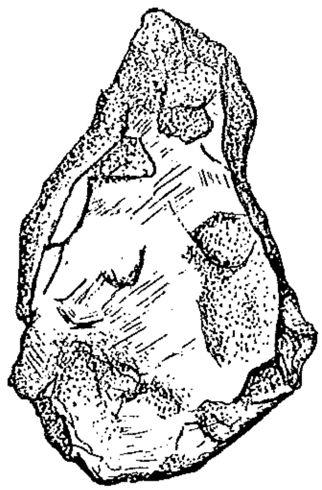

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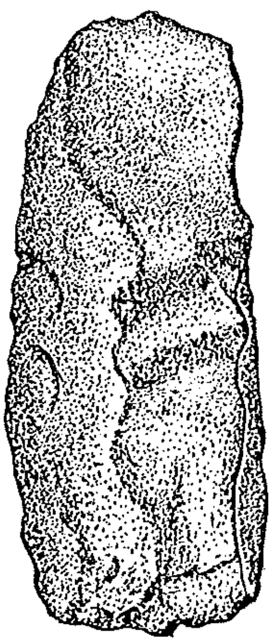

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a. Type C - Large Peripherally Chipped Celt (A66.1.5049)

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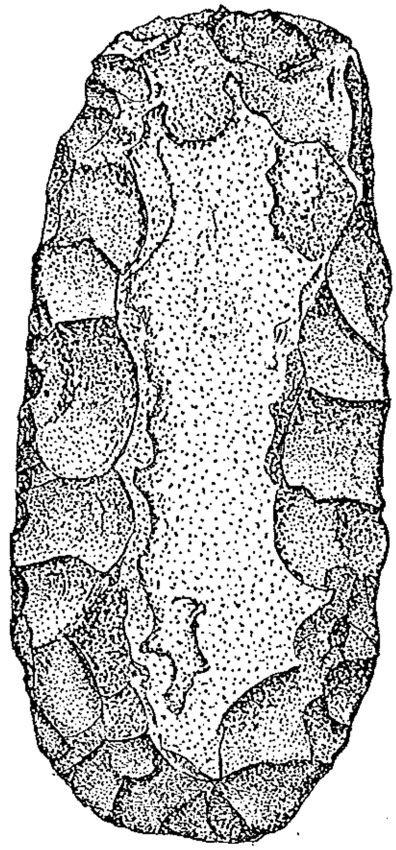

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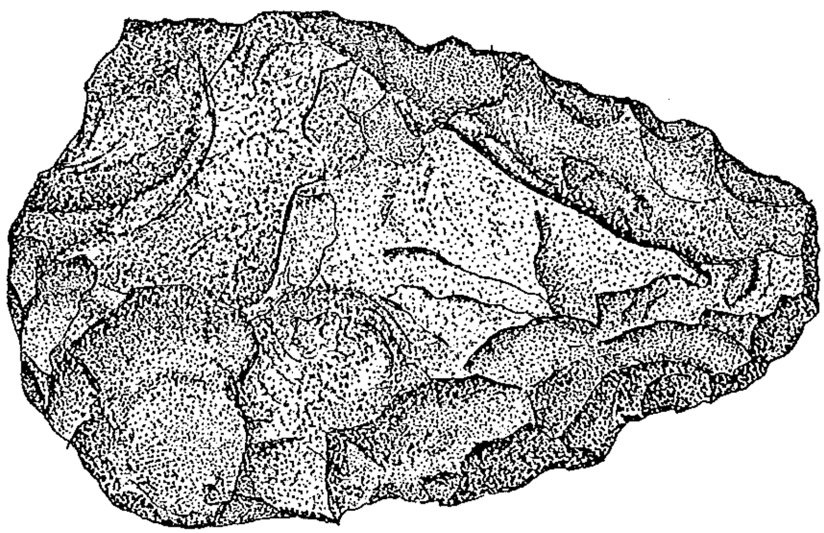

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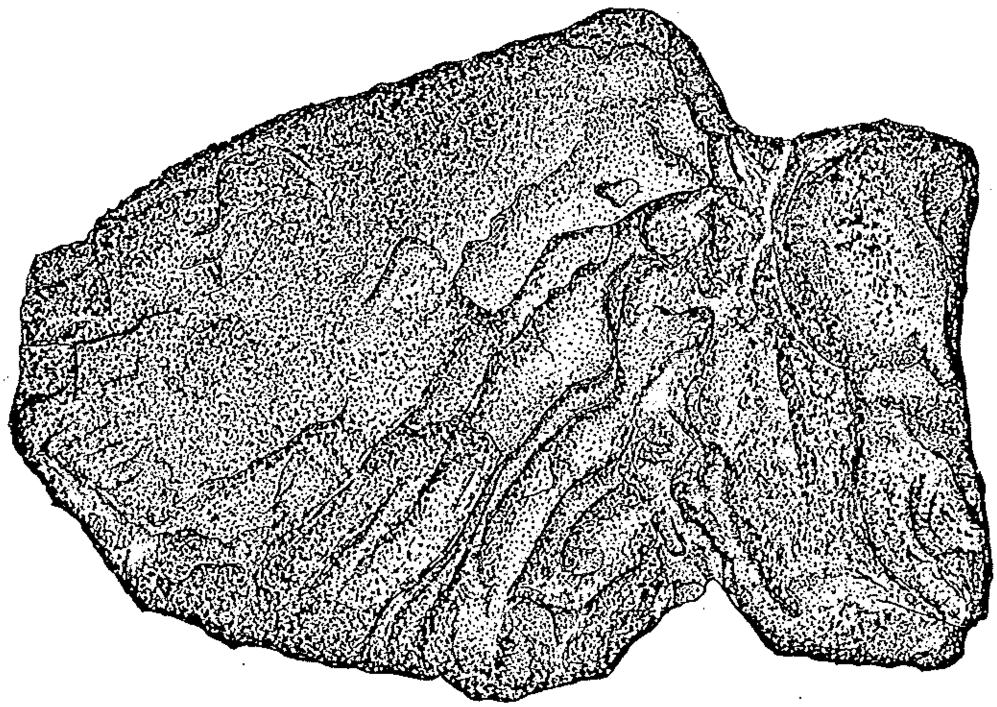
Type G - Axe (A66.1.2262)

Figure 21



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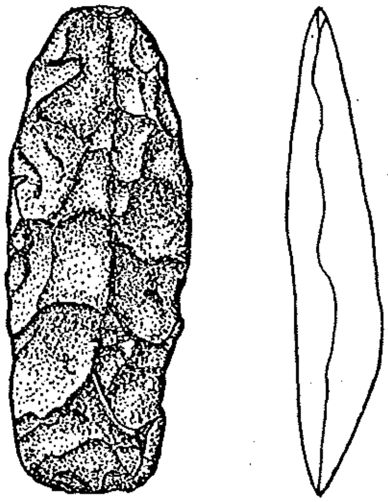

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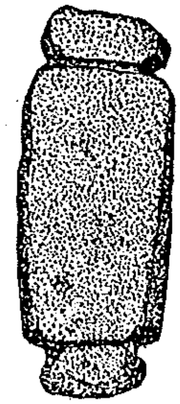

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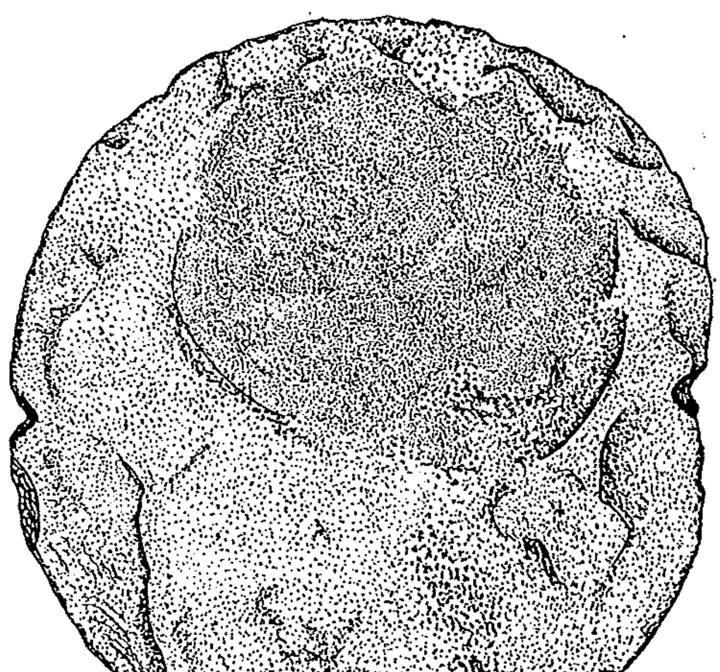

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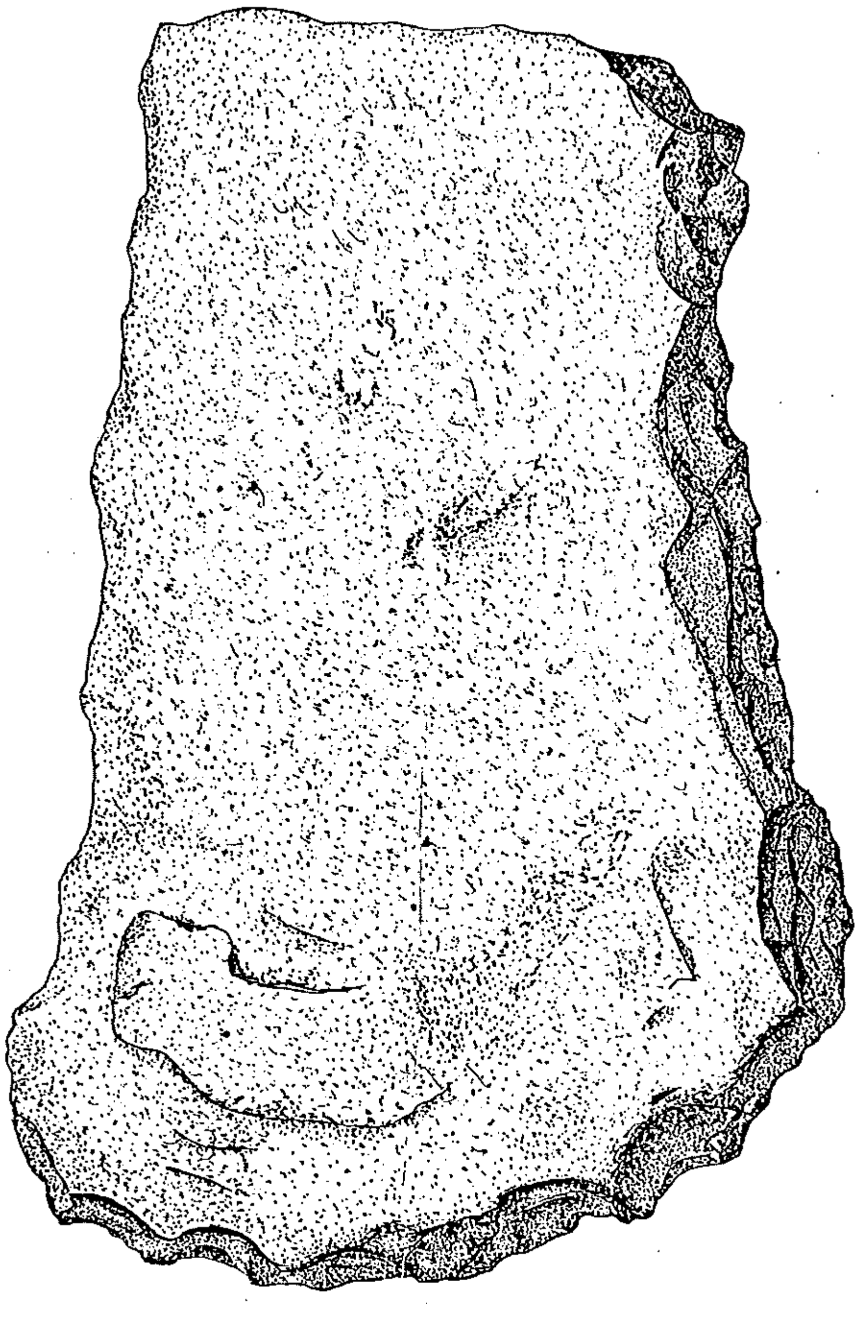

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Figure 24

Type K - Pounder (A66.1.4742)

Figure 24

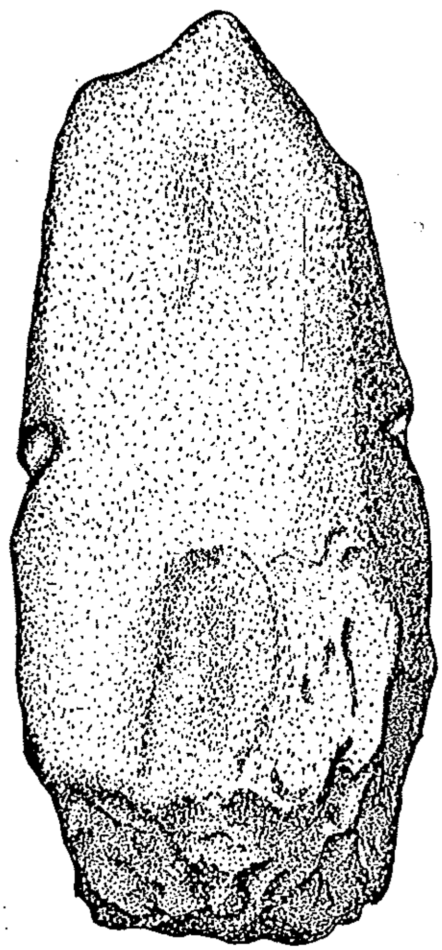

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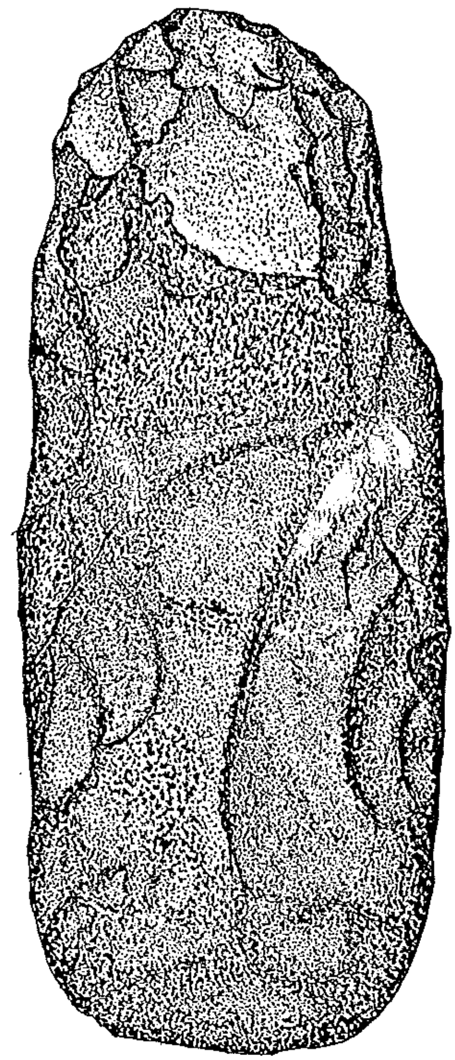
Figure 25



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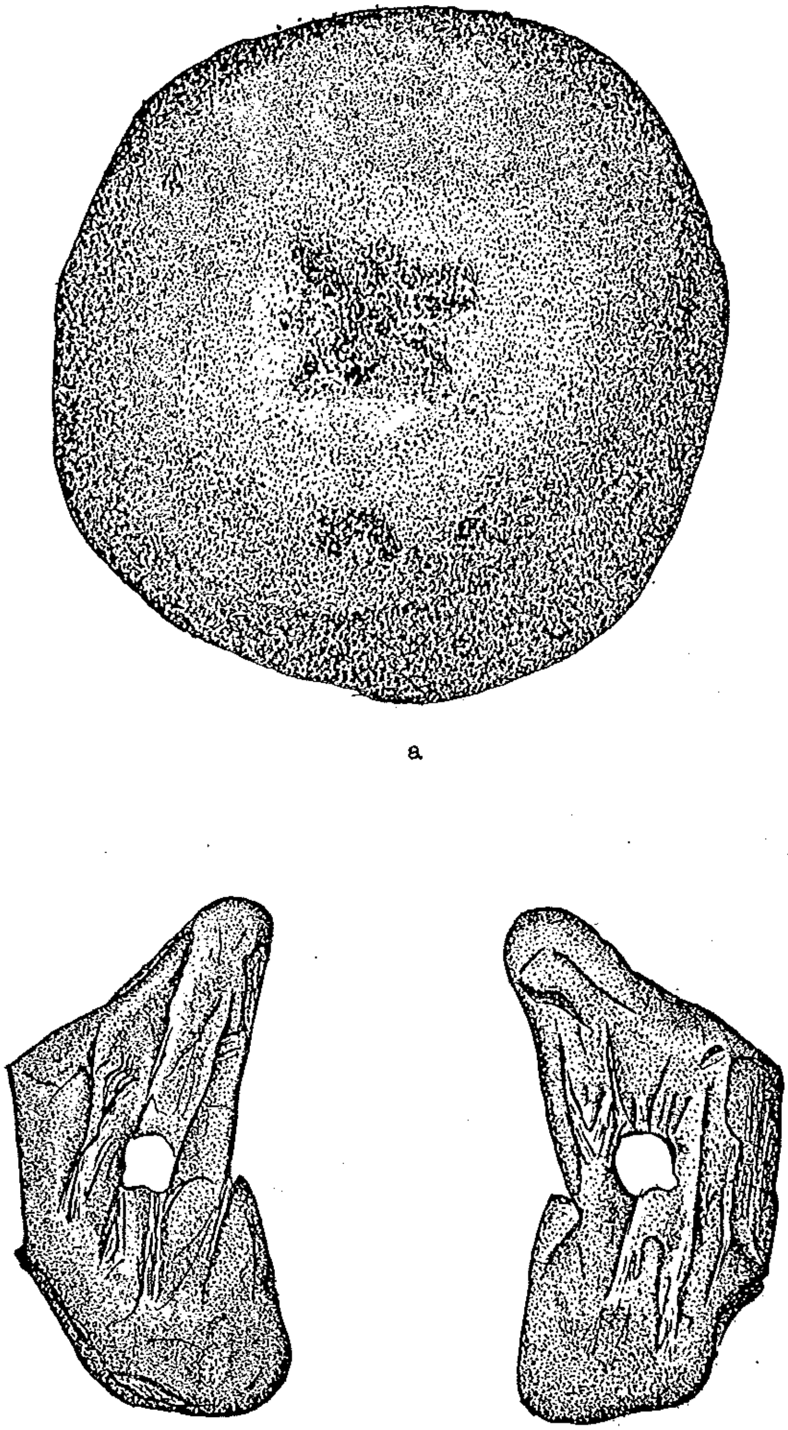

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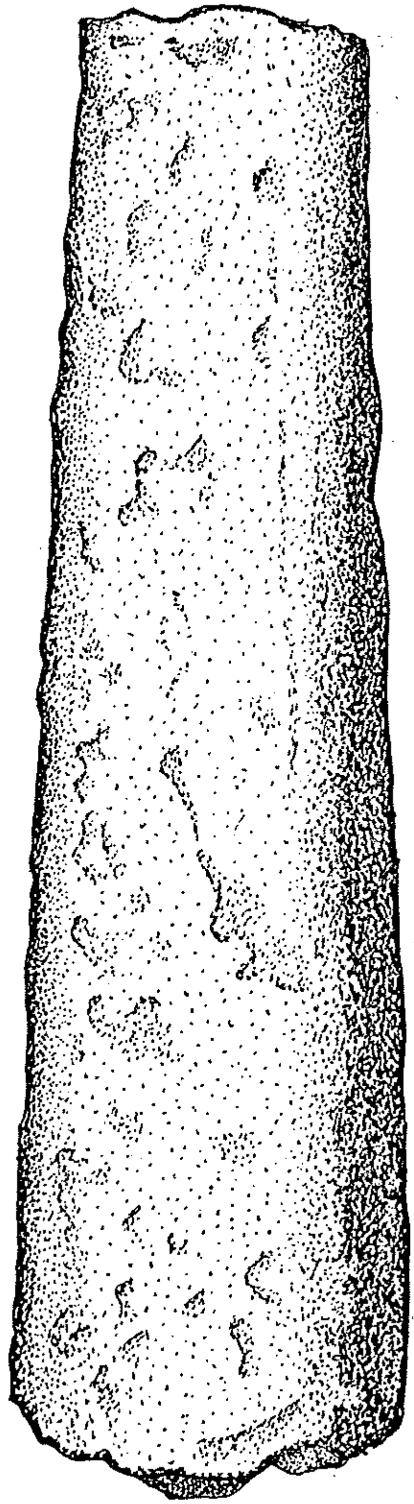

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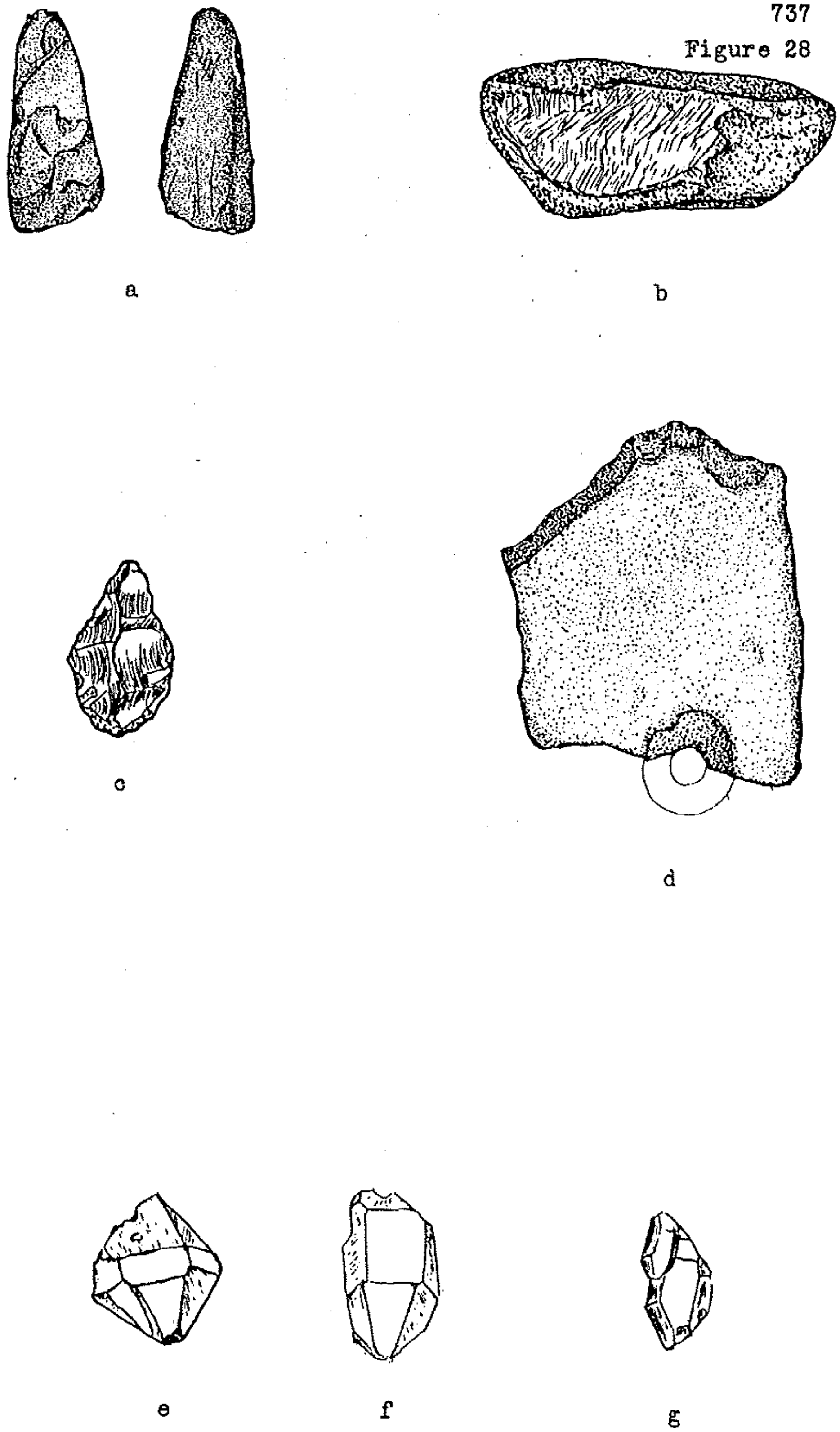


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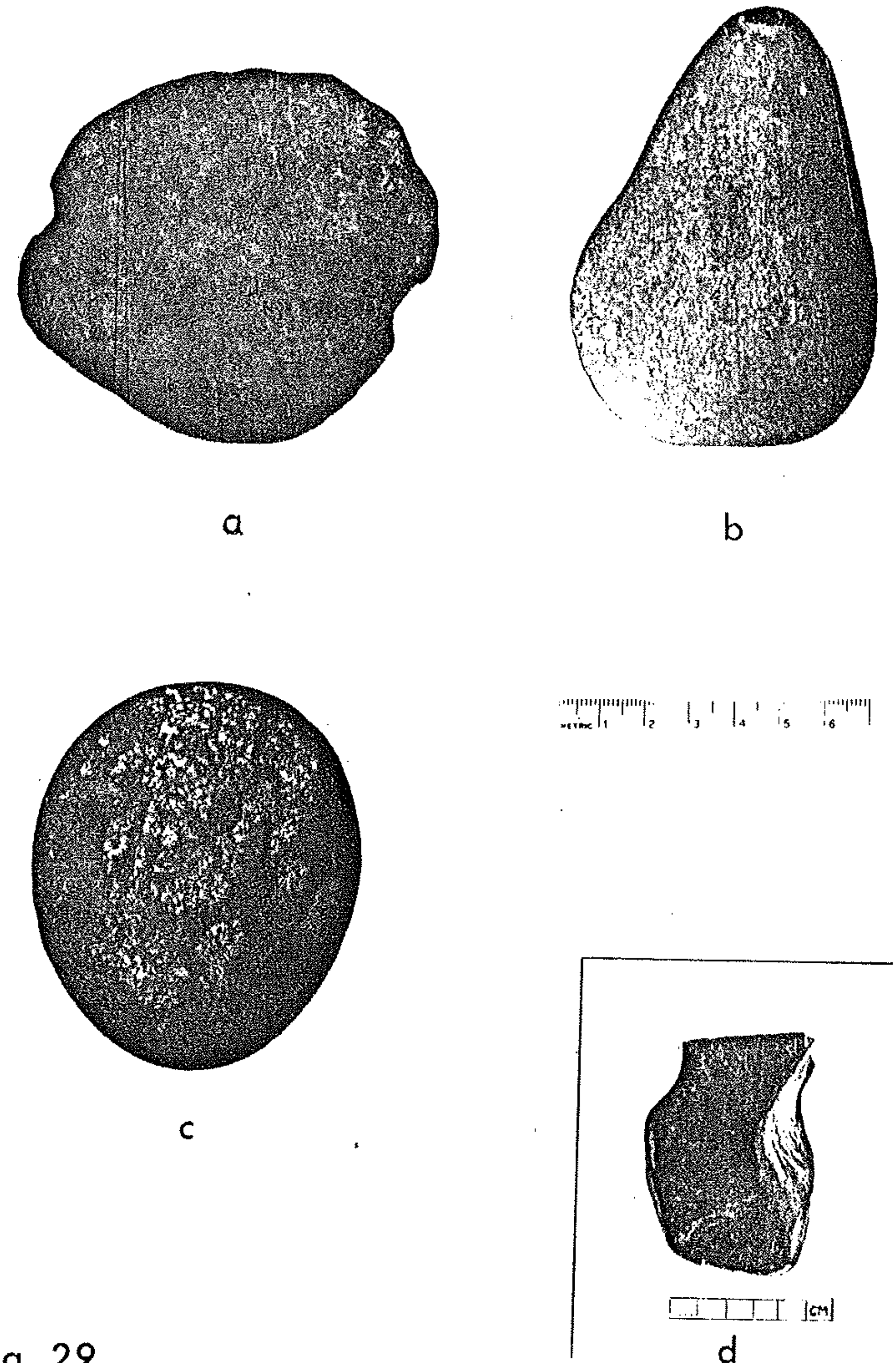


Fig. 29

# SURVEY EXCAVATIONS IN THE RAYSTOWN DRAINAGE

by

Ira F. Smith

## ABSTRACT

Three sites in the Raystown Drainage, in addition to Sheep Rock, received intensive examination in 1966. These sites are but three of thirty-five such sites which were discovered during the 1965 River Basin Survey of the area to be innundated by a newly proposed reservoir. At that time certain recommendations for further analysis of the Raystown history and prehistory were explicitly set forth. The recommendations called for salvage testing and excavation of ten of the thirty-five sites. This chapter is essentially a progress report on the excavations conducted at sites 36Bd36, 36Hu9, and 36Hu6. An analysis of the various mechanisms of excavation, including soil Ph-survey and polar coordinate rock shelter excavation, and a description of the materials discovered is undertaken. Recommendations for future research are also suggested.

The three sites include one small rock shelter camp (36Hu6) which exhibits Archaic, Late Woodland, and Susquehannock components. The site represents a specialized shell gathering camp close to the Sheep Rock Shelter. Site 36Bd36 is essentially a Late Woodland village site situated at the southernmost extent of the reservoir. A number of subsurface features were found along with a fairly large sample of fragmentary potsherds. A minor Archaic component is represented at the site. The remaining site, 36Hu9, is primarily an Archaic site, with a small Late Woodland ceramic component.

# ACKNOWLEDGMENTS

The owners of the properties, upon which the different sites discussed in this chapter are located, were most cooperative and congenial. We would like to express our thanks to Mr. George H. Grove and son for their permission to excavate at the Cunningham Site (36Hu9), and to Mrs. Clair Corbin for her permission to excavate at Mussel Rock (36Hu6). We would also like to extend our gratitude to the Robert H. Workman family who gave permission and cooperated with our excavation on their property at site 36Bd36. Finally, we wish to thank Mr. and Mrs. Ross, neighbors of the Workman's, for taking an interest in our work, and for, on their own initiative, constructing a fence around the excavation to prevent the grazing animals from destroying the trenches after each day's labor.

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# INTRODUCTION

This chapter of the preliminary report for the archaeological field season from June 20 to August 26, 1966 is concerned primarily with the analysis of materials obtained from the salvage excavation of several prehistoric sites, other than the Sheep Rock Shelter, situated in the Raystown River Valley. The Raystown Reservoir Archaeological Salvage and Survey Program initiated in 1965, as a reaction to U.S. Army Corps of Engineers plans for a new multipurpose dam on the Raystown River, has now passed into its second phase of analysis. The objective of the 1965 survey was primarily one of locating sites of prehistoric and historic interest, identifying them, and making recommendations for their future analysis. The objective of the 1966 program was to conduct more intensive research at several of those sites recommended for further analysis. Of the 35 sites discovered in 1965, ten were recommended for further study. Although much of our energy during the summer 1966 season was devoted to the continued excavation at the Sheep Rock Shelter, three of the ten recommended sites did receive intensive analysis and one other was surface collected. Sites for excavation were selected on the basis of those that it was felt would offer the student the best opportunity for learning the varied techniques of archaeological excavation and interpretation.

Sites 36Bd36 and 36Hu9, both open field sites, were selected because they offered the opportunity for establishing various types of standard excavation controls and for the analysis of subsurface Late Woodland features. Site 36Hu13 was selected because it would offer the opportunity for surface survey, selection of artifact concentration sectors, and decision as to how and where minor test pits should be laid out. Finally, site 36Hu6, a small rock shelter, was chosen because it was possible to use slightly different excavation techniques than were being used at Sheep Rock. The following discussion is designed to analyze the results of these four excavations.

# SITE 36Bd36

## General Ecology and History of the Site

This site is located on the Robert H. Workman property in Liberty township, Bedford County, Pennsylvania (1900 Everett 15' quadrangle - EV3634). Mr. Workman, who has resided on the property since 1935, is but the last of a series of five owners who have lived at this farm since early in the nineteenth century. The prehistoric site itself, is situated on a high river terrace

(820msl), partially in a vegetable garden plot and partially in pasture land which has not been cultivated in the last ten or fifteen years. It is about 100 yards due east of the farm house. Vegetation in the area is quite sparse consisting of only a minor number of locust and cherry trees. There are no springs in the immediate vicinity of the site; consequently, the nearest water source is the river some 150 feet NNE of the area. The topsoil on the site averages about 12 inches deep and is dark brown and rich in organic matter. No excavations have previously been undertaken at Bd 36, but heavy surface collecting has occurred in the garden portion of the site, both by the owners and their neighbors.

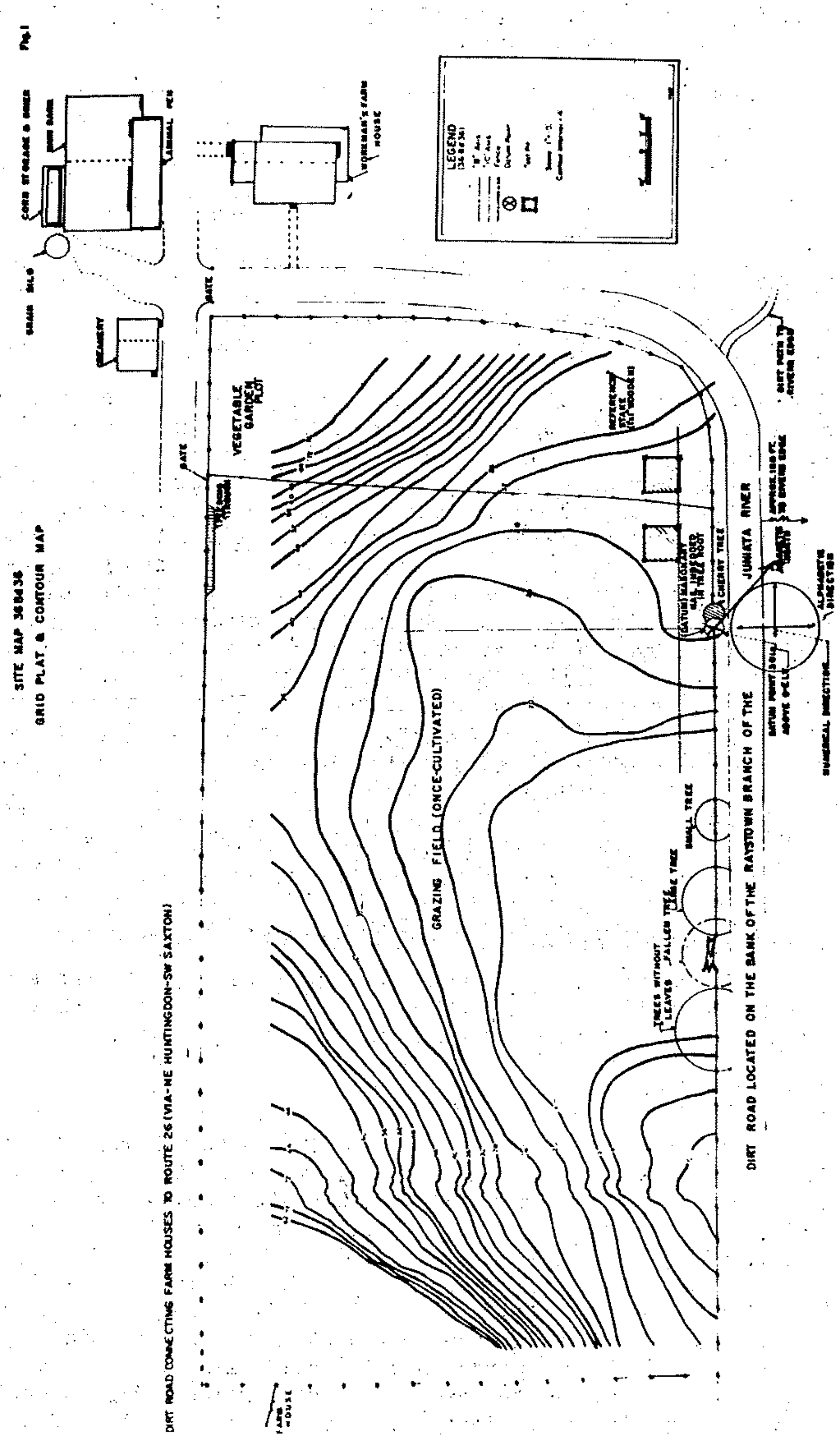
## General Methodology

Informant information suggested that the northern portion of the pasture was the area of heaviest artifact concentration. This was partially supported by the meagre surface collection taken from the garden plot in 1965. Backed by this information, two ten-by-ten foot squares were laid out - one in the northern corner of the pasture and one in the eastern portion of the garden (Fig. 1). The grid is orientated parallel to the pasture fence row rather than along a magnetic north-south line so that the excavation could be expanded either parallel to or perpendicular to the river as the artifact concentration in either square might eventually dictate. The two base lines - the 'numerical' and the 'alphabetic' lines are orientated perpendicular to one another through the primary datum which is a masonry nail embedded in the root of a nearby cherry tree (Fig. 1). The alphabetic base line A corresponds to the fence row lying parallel to the river; line B is ten feet southwest from the fence row, etc. The numerical base line number '10' runs perpendicular to base line A through the datum with the numbers becoming progressively smaller as one nears the garden plot. The square designation is obtained by reading the north (magnetic) corner stake. Thus, the square located in the pasture is designated B7 while the equivalent square in the garden is designated B5. Excavation then proceeded by first removing the top soil as a unit, and then by cleaning the subsoil surface in the search of archaeological features.

## Soil Ph Survey

As the excavation progressed, the researchers attempted to define the perimeter and the midden concentrations of the archaeological site under consideration by a more analytical technique utilizing the surface Ph values of the soil. In a paper entitled "Soil Ph as a Guide to Archaeological Investigations," presented at the May meetings of the Society for American Archaeology in Reno, David L. Weide (UCLA Department of Geology; Curator of the Mineralogy Museum; and Associate of the UCLA Archaeological Survey) demonstrated the value of relatively differing soil Ph readings in locating archaeological middens in California.

Figure I


SITE MAP 36B436
GRID PLAT & CONTOUR MAP
DIRT ROAD CONNECTING FARM HOUSES TO ROUTE 26 (VIA-NE HUNTINGDON-SW SAXTON)
DIRT ROAD LOCATED ON THE BANK OF THE RAYSTOWN BRANCH OF THE JUNIATA RIVER
GRAZING FIELD (ONCE-CULTIVATED)
VEGETABLE GARDEN PLOT
GATE
CHERRY TREE
SMALL TREE
FALLEN TREE
TREES WITHOUT LEAVES
LEGEND

Utilizing Mr. Weide's basic system and a Hellige-Truog Soil Reaction (pH) Tester No. 693, we attempted to apply this technique to Northeastern Archaeology.

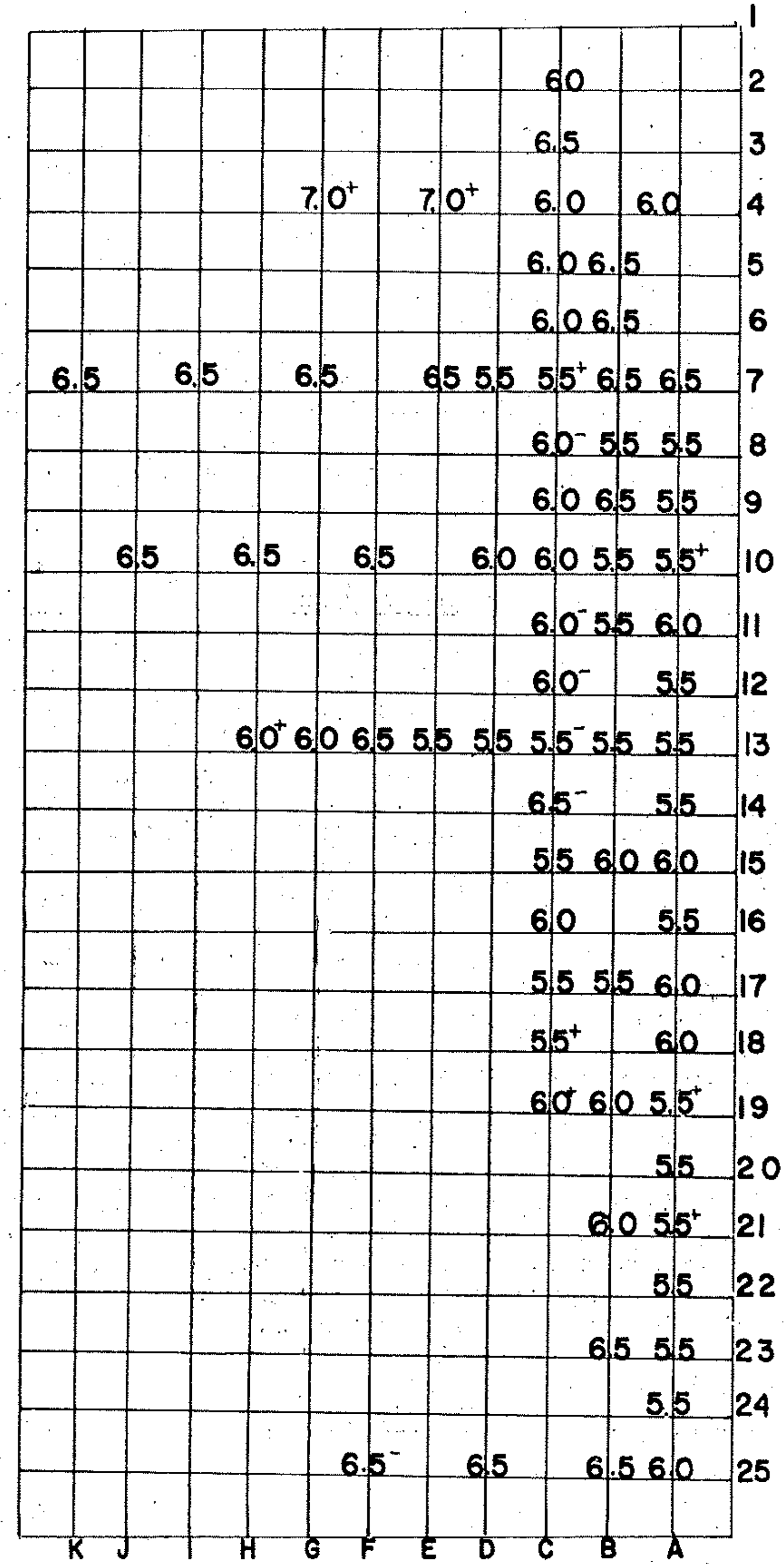
Soil samples were collected at ten foot intervals over the basic grid plan. About one inch of recent surface debris, grass, manure, etc. was removed before the sample was taken with the aid of a small grapefruit knife. A small sample was extracted, placed in a plastic vial with provenience designation label on white paper enclosed, and transported back to the laboratory where the Ph tests were executed by an investigator other than the one who collected the samples, thus allowing a fair degree of objectivity. The samples were tested randomly until all 70 specimens were examined; the values were then plotted on the grid plat (Fig. 2).

Examination of the figures presented on the enclosed map shows that the soil Ph values fall within the base range 5.5 to 7.0, thus indicating the general acidic nature of the soil. It will be further noted that the 5.5 values cluster within ten feet of the fence row and essentially within the pasture area. A five-by-five foot test square was excavated at A12 to test the hypothesis that the cluster of 5.5 values in that vicinity represented a concentration of occupational refuse. The results did not support the hypothesis. No sub-surface features were found and the cultural materials extracted from the top soil were considerably less abundant than those obtained from B7 and B5. In an attempt to explain the failure of the soil Ph test to perform as satisfactorily as it does for Mr. Weide in California, two factors must be considered. First, the testing equipment used was not as sensitive or as accurate as the electronic equipment used by Mr. Weide and others, and therefore the range of significant variability in Ph value among the samples was considerably reduced. Secondly, the tests were made on soils which were exposed to droppings from Cherry trees, cattle manure, and, in the case of the vegetable garden, the addition of lime.

It would seem worthwhile to repeat the soil Ph tests with better testing equipment, and to initiate further soil Ph testing programs at other sites within the Raystown vicinity.

## Ceramic Analysis

The ceramic component from 36Bd36, although relatively large in number (832 sherds), is equally small in size (avg. 15mm). All the pottery comes from the two topsoil zones - zone A (dark brown disturbed topsoil) and B (lighter brown undisturbed topsoil). No pottery was found below 20 inches in zone C which was the moisture-free, yellowish subsoil. A majority of the sherds show intensive wear over their entire body, rounded edges, and deterioration of any surface design which may at one time have been present. Other sherds show intensive leaching-type deterioration. In general, the sample is not particularily conducive to valid ceramic classification. An attempt will be made,



1
6.0 2
6.5 3
7.0+ 7.0+ 6.0 6.0 4
6.0 6.5 5
6.0 6.5 6
6.5 6.5 6.5 6.5 5.5 5.5+ 6.5 6.5 7
6.0- 5.5 5.5 8
6.0 6.5 5.5 9
6.5 6.5 6.5 6.0 6.0 5.5 5.5+ 10
6.0- 5.5 6.0 11
6.0- 5.5 12
6.0+ 6.0 6.5 5.5 5.5 5.5- 5.5 5.5 13
6.5- 5.5 14
5.5 6.0 6.0 15
6.0 5.5 16
5.5 5.5 6.0 17
5.5+ 6.0 18
6.0+ 6.0 5.5+ 19
5.5 20
6.0 5.5+ 21
5.5 22
6.5 5.5 23
5.5 24
6.5- 6.5 6.5 6.0 25
K J I H G F E D C B A


Figure 2

however, to describe as accurately as possible those sherds which still retain visual attributes of description.

Table 1 shows the distribution of sherds per square as well as general counts. The headings are self-explanatory with the possible exception of one - "No. of Plain". This number does not necessarily refer to a plain type ware, but means only that within this category are included sherds in which cord paddling was probably obliterated by weathering.

Three elements - rim shape, temper, and decoration - were studied, but due to the relatively few number of sherds in some cases (e.g. 16 rims) and their small size only superficial conclusions were drawn. Unfortunately, neither vessel form, temper, nor body decoration can be inferred with any degree of accuracy from the sample. However, the following rim shapes were identified:

| Rim Type | Form | Description | No. per Sq. B7 | No. per Sq. B5 |
|---|---|---|---|---|
| 1 | | Slightly everted and rounded lip | 3 | -- |
| 2 | | Straight, horizontal lip | 5 | 1 |
| 3 | | Sloping lip (variant of 2 or 4) | 2 | -- |
| 4 | | Sloping with slight neck overlap | 1 | 3 |
| 5 | | Sloping, no eversion, constricted neck incision | 2 | -- |
| 6 | | Rounded lip (variant of 1 or 4) | -- | 1 |

The temper consists of quartz, chert, and limestone in all cases. The greatest number of sherds exhibit large potholes where temper material has been leached out. Tests on these sherds with HCL indicate that limestone is still present as a temper and suggests that this media is what has been leached out. Quartz and chert occur in the remaining sample with about an equal number of sherds exhibiting one or the other. Only 59 sherds could be used in the analysis of exterior decoration. In general cordmarking is not particularily distinguishable due to the small size of the sherds. Several variations are recognized but have little connection with identifiable rims or temper.

| Cordmarking Type | Description | Color |
|---|---|---|
| A | Longitudinal | Dark brown to black |
| B | Multiple confused | Tan to brown |
| C | Heavy indentation | Brown |
| D | Moderate indentation | Black |

Three types of pottery appear to be present on the site. The first two types mentioned are similar to types found at Sheep Rock. The third type suggests affinities with Virginia and is not manifested in this particular form at the Sheep Rock. First, the two incised sherds (rim type No. 5, chert temper) are a definite Shenks Ferry type. Second, the chert- and quartz-tempered, cordmarked sherds suggest Late Woodland similarities in the Clemson's Island (cord type A), Owasco (cord type D), or Canandaique (cord type B) sequences. Finally, the limestone-tempered, highly leached and weathered sherds appear similar to the Radford Plain series of Virginia (Evans 1955: 68).

## Lithic Analysis

Ground Stone. Three ground stone artifacts were found in the excavation. One piece found during surface survey is classified as a pitted hammerstone (Fig. 3a). The specimen is of a fine-grained sandstone with a bipit pecked on one horizontal face and a single pit on the other. The end shows extensive fracturing indicating use as a hammerstone. The next specimen is also a pitted hammerstone nine by eleven cm. in dimensions (Fig. 3b). It is an irregular, fine-grained sandstone or siltstone with both faces showing evidence of pecking over their entire surfaces. The centers of each face show somewhat deeper pecked depressions as much as 45mm in diameter. There is no evidence of wear on the edges of the specimen which suggests that its function was as a receptical for grinding rather than as a hammer. The final specimen, a fine-grained sandstone, has one face ground very flat (Fig. 3c). Its function is unknown.

Chipped Stone. Many material types such as rhyolite or jasper are easily discernible from one another. Others, however, such as chert and chalcedony are not so easily distinguished. Even geologists define these various silicates in various ways. For the purposes of this paper, we have chosen to set up our own definitions for these various material types (Table 2). The definitions help in identifying different specimens, but whether or not they are culturally significant is debatable at this time.

The distribution of flakes within the excavation suggests, as does pottery, that square B7 is situated in the main area of cultural concentration. Square B7 contained 1559 flakes while square B5 contained only 946. Approximately twice as many siltstone and rhyolite flakes are present in B7. Chalcedony, jasper, chert, and flint detritus exists in relatively equal amounts in both squares. The heavy emphasis on lithic debris at this site suggests a stone-working focus and perhaps a hunting economy.

Approximately 55 chipped stone tools were found in the topsoil of both squares. Many of these tools are little more than retouched flakes with an unknown function (Table 3). Six flakes exhibit unifacial retouching while nine flakes show bifacial retouching. Nineteen fragments of unidentifiable projectile points of various materials were found. Five cores were also found. One drill tip and a bifacially-worked knife fragment were discovered.

The projectile points indicated that two main periods of settlement are represented at 36Bd36. The earliest is a minor Archaic occupation represented by six projectile points (Fig. 4a). There is really no way of ascertaining how extensive this occupation is, since so little of the site has been excavated. A second occupation, a Late Woodland component, is suggested by the presence of the various Late Woodland pottery types as well as seven triangular arrow points (Fig. 4b). It is only suggested at this time that perhaps what we are dealing with is a Late Middle Woodland component instead of a Late Woodland component. This could be the case since much of the pottery is a limestone-tempered ware, and if the analysis of the crude triangular points from Sheep Rock indicates that they fall with the Middle Woodland component there.

## Features

Thus far the discussion has dealt only with artifactual materials from the disturbed topsoil zones A and B. Several features, however, were discovered in the subsoil of square B7. Unfortunately, no artifacts were found in direct association with these features. Consequently, it cannot definitely be stated with which occupation period these features belong. The features consist of one small charcoal pit about 12 inches in diameter and four possible post-holes. These post-holes average about two inches in diameter and are seen as slightly darker, circular-shaped areas within the lighter subsoil. If these are actually post-holes, then the assumption might be made that they belong to the Late Woodland (perhaps Middle Woodland) component which probably exhibited a more settled life than the Archaic hunter.

## Summary and Conclusions

Evidence suggests that at site 36Bd36, at the southernmost end of the proposed reservoir, there exists some form of prehistoric Indian village site. Limited test excavations revealed several subsurface post-holes and a fire pit which, at least, partially suggest some form of semi-settled existence. More excavation will be necessary before it can definitely be said whether we are dealing with a single house structure or a small village site. If it should prove to be a village site, then we can expect to find some of it missing, since the northern portion of the site was destroyed by the 1936 flood. Topsoil artifact yield points to two periods of habitation - Archaic and Woodland. To which of these periods the subsurface features belong cannot be stated definitely; however, it is projected that they are associated with the more sedentary Late component.

Triangular projectile points and pottery of the Owasco, Clemson's Island, and Radford series imply a very early Late Woodland or a late Middle Woodland date for a portion of the settlement.

The Radford-like pottery, a limestone-tempered ware, is quite different from the thick, crudely cordmarked, limestone-tempered pottery at the Sheep Rock. Perhaps the difference is accounted for by weathering at Bd36. Two sherds of Shenk's Ferry Incised point toward a southern boundary for this late horizon. A definite stone-working focus and perhaps a hunting economy would seem to be implied by the great amount of lithic detritus (2500 chips/55 tools) found in the topsoil of only two ten by ten foot squares. Whether a major portion of this detritus is associated with the Archaic or Woodland component is not known.

As one can readily see, there are many unanswered questions concerning the site. It would be especially helpful if larger, more diagnostic pieces of pottery could be found. Consequently, it is recommended that several more ten foot squares be excavated before the site is considered identified.

## SITE 36Hu9

## CUNNINGHAM SITE

### General Ecology and History of the Site

The Cunningham site is located on the George H. Grove property in Penn township, Huntingdon County, Pennsylvania (1963 Entriken 7.5' quadrangle - E3631). The site received its name from the owner of the property prior to 1940. The area of prehistoric settlement is found to occupy much of a large, open field which is situated on the top of a rock outcrop approximately 30 feet above the Raystown River (720 m.s.l.). At this point the river, which is the nearest source of water and possible prehistoric transportation, is only about two feet deep. Another source of fresh water which was possibly utilized by the Indians is the fresh water springs located near the present-day farm dwellings. Evidence of early occupation is scattered over an area some 250-by-800 feet in extent. This particular area has undergone heavy cultivation in the past, but for the last 2 or 3 years has remained idle. Consequently, a heavy cover of weeds and berry bushes has gradually taken over. Surrounding the field one finds a fairly light growth of decidious forest. The topsoil varies from 4 to 12 inches in depth and is composed primarily of a brownish aluvial-type deposit which is heavily ladden with sandstone nodules. Underlying this is the moisture-free, hardpacked, yellow subsoil. Test excavations by the 1965 survey indicated that the northwest portion of the field was the area of heaviest pottery concentration of a Late Woodland date. It was suggested that some form of house structure might be present, and that extensive testing operations be undertaken in this sector.

## Methodology

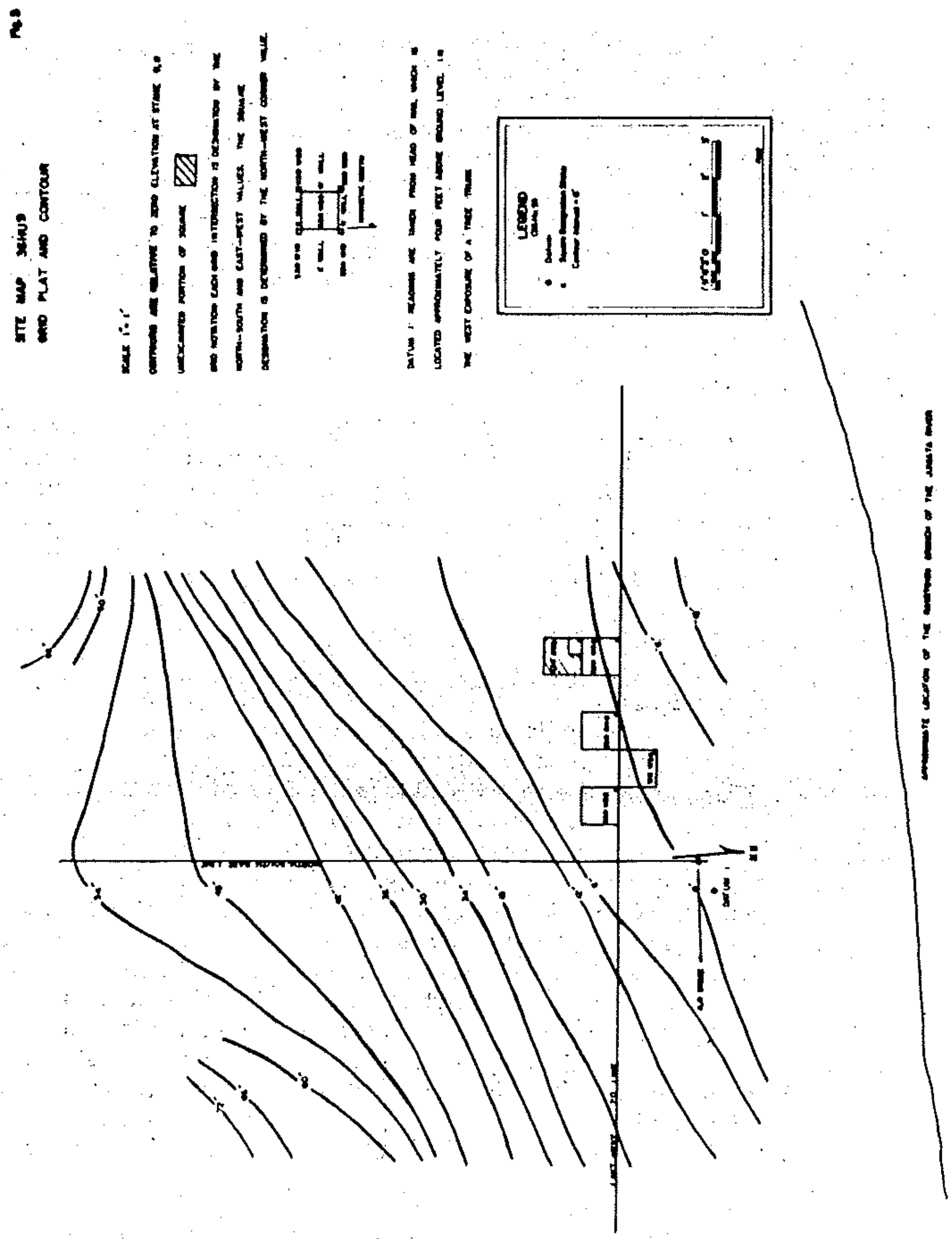
The first step was to have the field divided into a series of ten-foot linear units running perpendicular to the river. Within these units the students were asked to surface collect in order that (1) they might become familiar with the type of artifacts and detritus present on the site, and (2) that we might locate any area of unusually heavy artifact concentrations. The surface survey added little to our existing information, so it was decided to excavate in the region suggested by the 1965 survey. A zero-zero reference point was established and the grid was laid out along an approximate (3° error) magnetic east-west line running parallel to the river (Fig. 5). The grid began ten feet west of the north-south base line and ten feet south of the east-west base line. Eleven ten-by-ten foot squares were laid out. Removal of the topsoil was then executed by arbitrary six-inch levels in alternate squares, with the objective of finding subsurface features and artifact concentrations which would suggest the direction in which the excavation should be expanded. Datum was established about four feet above ground level in the west exposure of a nearby tree (Fig. 5). Squares were designated by the northwest corner stake. For example, square S20-W40 means that the northwest stake is 20 feet south of the east-west base line and 40 feet west of the north-south base line. Utilizing this system, four ten-foot squares were excavated completely (to subsoil) and a portion of a fifth square was started.

## Ceramic Analysis

Excavations were initiated in the sector of the site suggested by the 1965 survey. Nearly 130 small pottery fragments had been discovered in this area. These sherds were tentatively identified as Late Woodland and as being of the Clemson's Island series (Smith 1965: 20). However, in the excavation of four ten-by-ten squares by the 1966 team, only a very few small pottery sherds were found. The yield consisted of only 42 sherds, a number insufficient to do more than describe one or two of the larger pieces. The average size of the sherds is only 13-by-20 mm, the largest being 35-by-58 mm. Why fewer sherds were found this year than in 1965 is speculative. For one thing, the topsoil was removed more rapidly, since the objective was to uncover undisturbed subsurface features. Therefore, many small sherds, as were found in 1965, could easily have been overlooked. On the other hand, it is very possible that excavations were undertaken in the wrong area, and that excavation farther to the southwest, in the direction of the spring, would have been more productive.

Seventy-five percent of the sherds found this year (ca. 32) were tempered with gray, angular blocks of chert; eight sherds appeared to have had the temper leached away by the elements; two sherds have rounded quartz temper. The eight leached-out sherds remind one of the limestone-tempered Radford-like pottery from 36Bd36. Many of the pieces show the same water worn edges

# Figure 5


SITE MAP 36HU9
GRID PLAT AND CONTOUR
CONTOURS ARE RELATIVE TO ZERO ELEVATION AT STAKE
UNEXCAVATED PORTION OF SQUARE
GRID NOTATION EACH GRID INTERSECTION IS DESIGNATED BY THE
NORTH–SOUTH AND EAST–WEST VALUES. THE SQUARE
DESIGNATION IS DETERMINED BY THE NORTH–WEST CORNER VALUE.
DATUM 1 READINGS ARE TAKEN FROM HEAD OF NAIL WHICH IS
LOCATED APPROXIMATELY FOUR FEET ABOVE GROUND LEVEL IN
THE WEST EXPOSURE OF A TREE TRUNK
LEGEND

and obliterated surfaces. Exterior decoration appears to have been cordmarking. There is no indication as to whether the areas of leached-out temper were at one time filled with limestone or chert. The chert-tempered sherds are in general very crude, and grossly cordmarked. The markings, where visible, are deep and wide. Two sherds show a beaded type of cordmarking which reminds one of the collars of Owasco vessels found at the Sheep Rock Shelter. One very badly damaged rim-sherd also suggests this association.

Given the sample available, it is nearly impossible to draw any conclusions. The leached-out sherds could be of the Radford series and the same as those found at 36Bd36. On the other hand, they may be badly worn sherds belonging to the chert-tempered variety. The quartz and chert tempered sherds probably belong to either the Owasco or Clemson's Island series. When dealing with such a small number of cordmarked body sherds, one cannot say definitely. The only fact that seems fairly certain is that, according to the pottery, we are dealing with a Late Woodland component.

## Lithic Analysis

Ground Stone. Only one specimen which can actually be classified as a ground stone tool was discovered. This specimen (12.8 cm by 11.0 cm by 6.4 cm) was a large pebble which showed no battering or hammering evidence on the edges but which contained two small pits or "finger holes" side by side at one of the corners. Two other specimens, both of sandstone, show evidence of battering along the edges. These battered edges may or may not have occurred through human utilization.

Chipped Stone. Distribution of chipping detritus within the excavation is not particularly informative. Remembering that different crews removed the topsoil with differing degrees of speed and sifting activity, the distribution of total flake counts within the squares is relatively uniform (i.e. S20-W20 - 268; S20-W60 - 303). The greatest number of flakes come from either a rhyolite or a greenish siltstone (436). Cherts (271) and flints (225) represent the next greatest number. Jaspers (56), chalcedony (39), and quartz do not represent a significant proportion of the sample. A wide range of material types, as indicated above, is what one would expect to find on a site heavily utilized by Archaic peoples, since the Archaic peoples used the variety of materials that were readily available, and in general showed no particular preference for one type of exotic stone. At Sheep Rock jasper appears to have been used almost solely by the Archaic peoples, while cherts and flints became more predominant in later times.

Twenty fragments of projectile points which could not be identified were found in the topsoil of the excavated squares (ten tip fragments; eight basal fragments; and two midsections). The fragments were portions of points manufactured from a wide variety of materials. Seven flakes of chert and flint showed secondary retouching along one or more of their edges. Their function was probably as some type of cutting implement. Three scrapers and two ovate knives were also uncovered.

a) Side scraper - This specimen is made on a flake of unknown material. It shows secondary retouch along 2/3 of its long side. This retouching also extends around the short end of the tool (Fig. 6a).

b) Two end scrapers - These two specimens are nearly identical. Both are made from flint; both could be hafted end scrapers. They represent two slightly side-notched Archaic points that were broken through use and then had the fractured end continually retouched. All that remains of the point is its haft element and a small portion of the blade which now functions as a beveled end scraper (Fig. 6b).

c) Two ovate knives - The two specimens are ovate in outline. They are made from a shale-like material or siltstone. The chipping is essentially primary with no secondary retouching along the edges. The edges do, however, appear to exhibit some wear which suggests a knife function (Fig. 6c).

Several bi-facially worked pieces were found. Two probably represent knives and four appear to be sections of drills (three basal; one mid-section). The remainder of the chipped stone sample consisted of 26 points. A point may be used to include arrowpoints, spearpoints, or knives. No attempt has been made to establish chronologically significant types since the sample is so small. However, points with similar attributes have been lumped together for descriptive purposes and where possible type designations of comparable Sheep Rock specimens are given. With the exception of eight, or possibly nine specimens, the sample appears to represent essentially Archaic types.

Type A) Number of specimens 5: (Late Woodland) - Five triangular or triangular-like specimens. Three pieces are elongated triangular-shaped points similar to Sheep Rock Type 39; one is a straight-based point similar to Type 38; the other is a fine chalcedony specimen similar to Sheep Rock Type 37 (Fig. 7a).

Type B) Number of specimens 3: Triangular-shaped blanks. These specimens are probably unfinished artifacts. Their preliminary form is triangular; what their ultimate form would have been is not known (Fig. 7b).

Type C) Number of specimens 1: (possible Early Woodland) - The specimen exhibits a modified lanceolate form similar to Sheep Rock specimen Abb.1.128. The piece is broken and the end shows retouching to form some type of blunt-ended instrument (Fig. 7c).

Type D) Number of specimens 1: (Early-Middle Woodland) -

This is a straight based, side-notched specimen similar to the "Racoon Side-notched point" and Sheep Rock Type 27. The primary difference is that this specimen exhibits basal grinding which is not a characteristic of the Sheep Rock Type (Fig. 7d).

Type E) Number of specimens 1: (Transitional) - Although not a classic form, this point resembles somewhat the "fishtail" type projectile point (Ritchie 1961: 39) and is quite similar to Sheep Rock Type 35 - side-notched, slightly convex base, long blade, and unevenly sloping shoulders (Fig. 7e).

Type F) Number of specimens 1: (Archaic) - Straight, slightly ground base, side-notched, with right angle shoulders. The specimen is probably a retouched form of Sheep Rock Type 13 (Fig. 7f).

Type G) Number of specimens 3: (Archaic) - Relatively straight bases, side-notched, sloping shoulders, with straight or slightly excurvate blade edges. The more angular specimen of the three resembles Sheep Rock Type 21 and may possibly be Transitional (Fig. 8a).

Type H) Number of specimens 2: (Archaic) - Slightly convex bases, elongated side-notches approaching expanded stems, and short blades with slightly excurvate edges. The specimens are similar to Sheep Rock Type 12, although the Sheep Rock specimen shows basal grinding and these do not (Fig. 8b).

Type I) Number of specimens 3: (Archaic) - Straight to slightly convex bases, straight to slightly expanding stems, wide excurvate blades. Two of the specimens made from rhyolite resemble Sheep Rock Type 24. One of these was broken and retouched along the front edge. The third specimen is possibly middle Archaic and similar to Sheep Rock Type 2 (Fig. 8c).

Type J) Number of specimens 1: (Archaic) - Bifurcated base, straight-stem, with a short retouched blade. The comparable example from Sheep Rock Type 7 (Fig. 8d).

Type K) Number of specimens 1: (possible Archaic) - Possibly a contracted-stem projectile point (Fig. 8e).

Type L) Number of specimens 4: (probable Archaic) - Miscellaneous pieces. Several of these specimens probably represent knives rather than spearpoints (Fig. 9).

## Summary and Conclusions

From the surface collections and text excavation of the 1965 survey, it was postulated that a Late Woodland site, with possible subsurface features, was present at the Cunningham Farm. The artifacts found suggested both an Archaic and a Late Woodland (possibly Clemson's Island) occupation. The 1966 field team began more extensive excavations in an attempt to learn more about the prehistoric inhabitants. Four ten-by-ten foot squares were excavated to subsoil. No features were discovered with the exception of a small charcoal concentration in square S20-W60. The artifacts consisted primarily of lithic materials, a small amount of ceramic material, and a few mussel shell fragments.

It was impossible to draw any definite conclusions from the pottery sample. In general, it appeared to be of a Late Woodland type, either Owasco or Clemson's Island, with a possible minority sample of Radford Plain. Only five projectile points could be definitely attributed to the Late Woodland. Three others belong to the periods between the Late Woodland and the Archaic. The remainder of the points and the diversity of the material suggest a heavy Archaic component. In conclusion, it would appear the 36Hu9 represents a much more extensive Archaic site than it does one of Late Woodland times. The researchers feel that a Late Woodland settlement is present on the Cunningham site, but that it is either smaller than first postulated or it lies in an area other than that which underwent excavation. Quite possibly the Late Woodland component is located more toward the area of the natural springs. Nevertheless, it does not seem feasible to continue operations at 36Hu9 due, primarily to the limited time factor. Should more complete excavations be desired, it is recommended that heavy earth moving equipment be utilized. Excavation by manual means is far too slow and difficult to remove the amount of earth necessary to locate the Late Woodland area of settlement, if such actually exists.

## SITE 36Hu6

## MUSSEL ROCK SHELTER

### General Ecology and History of the Site

The Mussel Rock Shelter is located on the property of Mrs. Clair Corbin in Penn township, Huntingdon County, Pennsylvania (1963 Huntingdon 7.5' quadrangle - H8838). The site was designated as Mussel Rock in 1965 because of the predominance of river mussel shell found in the deposit. It is a small, compact, rock shelter located about where the larger relief cliffs of Devonian Catskill formation and the flood plain come together across from Snydertown. The Catskill formation, a red shell, has caused the soils on this side of the river, especially within the rock shelter, to assume a predominantly reddish appearance. The shelter is situated roughly 20 to 25 feet above the present reservoir level on the outside of a river meander. It commands a fine view of the river looking south and if one were to climb a short distance along the outcrop, an equally good view of the northern section of the river would be visible. The shelter has an overhang of 9 feet 1 inch and the drip line lies 9 feet 8 inches out from the interior wall. The possible living area within the shelter is quite small, not more than 10 by 12 feet, and is well protected from wind and rain.

Mussel Rock is magnetically oriented much the same as Sheep Rock and is located only about one to two miles south of Sheep Rock by river. It was first discovered during the 1965 survey. Prior to this no one knew that prehistoric man had occupied these cliffs. A test trench was dug through the site in 1965 revealing pottery, flint and bone tools, ground stone tools, shell, bone, and charcoal (Smith 1965: 18). An attempt was made this year to learn more about this small shelter.

## Methodology

A somewhat different system of excavation and grid construction for a rock shelter excavation was experimented with at Mussel Rock. The system essentially involved the use of polar coordinates and was chosen for several reasons. First, the shelter itself was so small that use of a regular five-foot rectangular grid would have resulted in the layout of many partial squares. Second, the 1965 test trench (Fig. 10) bisected the site into two signigicant units of relatively uniform size. Finally, with a two-foot trench running perpendicularly through the site the mechanism of measurement that we wished to use could be utilized nicely without disturbing any deposit which had not already been disturbed.

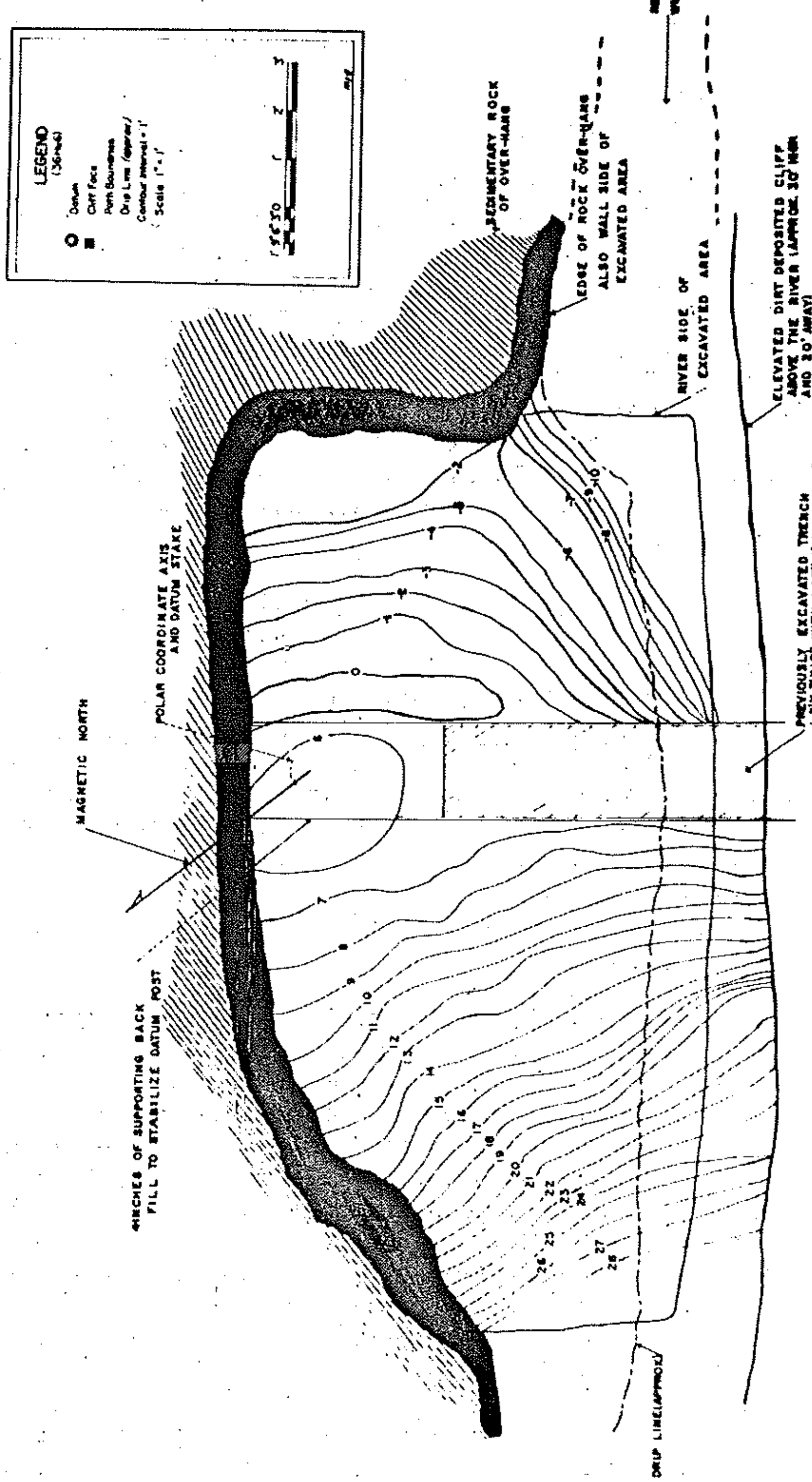
The design of the measuring mechanism was based on a similar mechanism invented by Mendel Peterson and used to plot the position of surface artifacts in underwater shipwreck sites (Peterson 1965: ). A cylinder of wood two inches in diameter and three feet long was set in a block of cement. At the upper end was bracketed a sliding piece of 3/4-inch thick plywood, 12 inches in diameter. On top of this wooden circle was secured a 12-inch plastic protractor with 360° readings; a nail was inserted in the top of the three-foot wooden supporting rod. The cement base of this mechanism was then buried at the back of the shelter within the 1965 test trench (Fig. 10); the protractor was zeroed in to magnetic north, the nail at the top of the three-foot central post acted as permanent datum. A string, knotted at one-foot intervals, was secured to the nail and allowed to rotate around the whole site. Because of the small size of the site, it was not necessary to establish pie-shaped excavation units as one might do when excavating a mound. Instead the deposit to the south of the test trench was designated as one unit while that to the north was designated as another. In order to plot the provenience of any particular artifact or feature, one needed only to extend a level string to that feature, read a distance from the nail with its degree notation and using a ruler or stadia rod get the depth of that particular feature below datum.

Using this system it was hoped that the entire site could

# Figure 9

Fig. 9

SITE MAP 36HU6
CONTOUR AND GRID PLAT



be excavated as a single unit, leaving every artifact in situ, in the attempt to establish actual living floors. Excavation over the entire site surface proceded by arbitrary one to two inch levels following the natural contour of the site. Should a natural strata be encountered by any of the excavators, the whole site would be excavated to that strata. The north and south unit divisions were to act as a check for any artifacts that were missed during troweling activities and found later in the screens. In theory this sounded feasible. However, certain problems arose and certain ideal conditions were absent, thus preventing us from realizing our prime objective. First, of course, was the time element. The micro excavation which we attempted requires great skill and time. Unfortunately, such time was not available to us, so it was necessary to modify our procedures midway through the dig. Second, troweling must be done very precisely being careful to leave each artifact in situ. Speed and inexperience on the part of some of the excavators prevented this. Third, a sufficient number of cultural materials must be present to warrant this technique and the establishment of actual living floors. They were not. Finally, the presence of natural stratigraphy would be an invaluable aid to finding living floors. Unfortunately, the deposit was a homogeneous red soil and no natural strata were visible.

Although this technique did not accomplish all that was hoped, it did raise some interesting possibilities. Given enough time, a sufficient number of artifacts and features, and perhaps some natural stratigraphy, it would be possible and valuable to reconstruct actual living floors at other small sites in the northeast. The system would also be valuable for plotting surface artifacts, or establishing concentration units, at sites in Meso-america or the southwest where surface debris is heavy. Finally, such a system could possibly be used in drawing house and room complexes.

## Ceramic Analysis

Not much pottery has been extracted from the Mussel Rock Shelter. About twenty small sherds were discovered in the excavation of the 1965 test trench. The more extensive excavations of 1966 - about three feet of deposit removed in the southern sector and about one foot in the northern - yielded only forty body sherds. The average size of these forty sherds was 18 by 24 mm; the maximum size being only 45 by 59 mm. Table 4 summarizes the pottery finds. Of course, forty sherds are not nearly enough to establish legitimate types or definite connections with other sites. However, an attempt has been made to lump the describable attributes of the pottery and show that six variations do occur at Mussel Rock.

It is evident from the pottery that we are not dealing with just one group of people, but with several different groups who have used this small rock shelter at various times. The

1965 survey report suggested that there may have been a small Shenk's Ferry component at Mussel Rock. The pottery from this year does not bear out that preliminary interpretation. Instead, it would appear that at least three groups occupied Mussel Rock. The first type of pottery, found in the upper three inches of deposit, suggest a Susquehannock occupation. Pottery types 2, 3, 4, and 5, found throughout most of the deposit, probably are variations of the early Late Woodland, Owasco or Clemson's Island series. The deepest pottery, found from 25-28 inches below the surface, is a limestone-tempered ware and perhaps belongs to the Middle Woodland time period. Judging from the small amount of pottery, it is highly probable that at no time was the number of people who stopped at Mussel Rock very large. In fact, at no time are we probably dealing with more than one individual or a small family group.

Lithic Analysis

Ground Stone. With the exception of the muller or anvil stone (Fig. 11) found about 14 inches below the surface by the 1965 survey, no other ground or pecked stone tools have been found. A number of unmodified sandstone cobbles, however, have been discovered scattered throughout the levels of the southern sector (220°-250°). These cobbles ranged in size from that of a fist to several as much as 10 inches across. They are obviously not indigenous to the site and certainly have no place in the Catskill formations which constitute the geologic strata on the Sheep Rock side of the river. They show no evidence of charring and most show no evidence of abrasive ware. Their function is unknown, but they were most certainly carried onto the site from the river.

Chipped Stone. The flint detritus is fairly uniform in quantity throughout the various levels. Approximately 169 chips and 4 cores were found. As with the pottery, most of the stone detritus is located in the southern portion of the site, adjacent to the 1965 test trench. It is noteworthy to mention that of the 169 flakes, 132 are of a fine black flint and the remaining 37 are of chert or chalcedony. It should also be mentioned that no jasper was found, although it is commonly found on the Archaic levels at Sheep Rock just a short distance away. Just why these should be a preference for black flint and a total lack of jasper at Mussel Rock is not known. It can only be speculated that such a situation suggests that there is very minor Archaic influence at Mussel Rock.

Other lithic specimens include seven fragments of projectile points (3 flint; 2 limestone; 1 chert; 1 rhyolite) which cannot be used for identification and three modified flint flakes. Four triangular points were found (one is somewhat questionable) this year; two were found in 1965. These six triangular points all cluster within the upper 17 inches of deposit (Fig. 12a). The one questionable point (Fig. 12b) was found 14 to 17 inches below the surface while the remaining five were found above 14 inches. Also found within the first six inches of excavation were three other fragments of elongated projectile points. They are not triangular in nature and perhaps represent some specialized tool or knife of the Late Woodland period (Fig. 12c). One of the specimens (A66.4.38), however, resembles either Type 15 or 18 from the Sheep Rock, both of which are pre-Early Woodland in time. Two final projectile points are slightly larger versions of the Type 13 projectile points from Sheep Rock. These seem definitely to belong to the Archaic horizon at Sheep Rock. At Mussel Rock they were found between 25 to 28 inches below the surface, the same level on which was found the isolated limestone tempered pottery sherd (Fig. 12d). There seems little doubt that the points are Archaic. Therefore, either the provenience of the limestone tempered sherd is incorrect or it represents an intrusion, thus the consequent mixing of the deposit.

Bone and Shell Analysis

Wild animal foods certainly played some rôle in the diets of the people who lived at Mussel Rock. Approximately 100 fragments of bone were scattered throughout the shelter's deposit. Included within these fragments were the remains of deer, beaver, various smaller animals, turtle, perhaps snake and fish. Twenty of the fragments showed evidence of having been in or near a fire (minor amounts of charcoal found at site; several possible ash concentrations), thus allowing one to be reasonably sure that the bones were not just dragged into the site by scavaging animals. Several tools made from bone were also found. Two of these (Fig. 13a) were found in 1965 while four were found this year. The four this year include:

a) One bone awl made from long bone fragment. The piece measures 58 mm long and shows smoothing along 20 mm of its length. The specimen was found about 6 inches below the surface (220°/8' - 44" bd). (Fig. 13b).

b) One bone awl made from a scapula fragment. The piece measures 93 mm long and shows smoothing along 58 mm of its length. The specimen was found from 14 to 17 inches below the surface (220°/ - 52-55" bd). (Fig. 13c).

c) One another tip that might have been used as a flaking instrument - 38 mm long (220°/8' - 44" bd). (Fig. 13d).

d) One portion of a long bone with what would appear to be an artifically rounded end. The piece is 50 mm long and its authenticity as an aboriginal artifact is questionable (220°/ - 63-66" bd). (Fig. 13e).

Mussels collected from the river also played a significant role in the economy of the peoples at Mussel Rock. Fragments of this shell were found in relatively great quantities throughout the deposit. At no level is there an absence of this shell; however, at no level is there any particularily heavy accumulation. Three hundred fifty-one fragments (over 8 mm) of mussel shells were found; 35 of these are whole or nearly whole (one-half or more) specimens. One possible ornament made from this shell was found. This is a fragment of shell, found about 6 inches below the surface, which has a hole drilled from the inside to the outside near the anterior attachment of the shell (Fig. 12f). In general, mussels would appear to be the preferred food at the shelter.

Summary and Conclusions

From all indications, Mussel Rock would appear to have been a campsite or temporary layover for small groups of people at various times. The artifacts suggest that most of the people who inhabited Mussel Rock did so during the Late Woodland period. Several pieces indicate that Archaic and perhaps Middle Woodland peoples also sought out this overhang. It would seem that settlement was limited mainly to the southern portion of the site. The peoples hunted various animal foods such as deer and turtle, however, there appears to be a definite preference for mussel shell at all times. Mussel Rock's proximity to Sheep Rock leads to the speculation that the people who stopped at Mussel Rock were possibly small groups from the Sheep Rock who came to this site because the river at that point afforded a good area for mussel shell collecting. Today, mussel can be found in great quantities about seven miles south of Sheep Rock. The river at this point ranges in depth from 6 to 12 inches, is fast moving in the center and slow along the shores, and the bottom is rocky with a considerable amount of river moss. Most of the shells lie on the shallow, slowly moving waters near the shore. In aboriginal times, before the modern dam was built, it is highly possible that such a riverine environment existed off shore from Mussel Rock and perhaps off shore from Sheep Rock also.

Another explanation for the occupation of Mussel Rock cannot be discounted. There is no doubt that it is stratigically located, commands an excellent view of the river in both directions, and is near enough to Sheep Rock that warning could quickly be given of approaching hostile visitors. The first interpretation, however, that Mussel Rock was a shelter for people collecting mussel shell in the river below, is probably more correct.

SITE 36Hu13

JAMES CREEK SITE NO. 2

This is a small site situated at the confluence of two secondary streams, located from one to two miles back from the river (1963 Entriken 7.5' quadrangle - E3251). From surface remains the 1965 survey identified the site as having Early Archaic and Historic components. It was recommended that a test trench be dug.

This year a team of five members surface collected over much of the site. During the 1965 survey the area of the site was planted in oats. This year the stubbles of the cut oats still remained. The team was able to find very few surface indications of prehistoric occupation. With no surface concentration of materials, it was impossible for them to determine where a test pit should be dug. Consequently, the idea of testing was abandoned. It is suggested that a surface reconnaisance of the site be made again in Spring 1967 when the field is plowed. If no artifacts are then found, it will be assumed that the occupation was so small, that testing would be of no value.

## SUMMARY AND RECOMMENDATIONS

One rarely feels that all the information from a site has been completely extracted. The excavations of the three sites this past season are no exceptions. The excavation at 36Bd36 left many questions unanswered, and it is felt that more testing should be conducted at this site in the future. The objective would be to expose more subsurface features and attempt to identify the type of structures present on the site. Although extensive excavations were undertaken at 36Hu9 without the desired results, the excavators feel sure that a Late Woodland component is present. If money and time become available in the future, heavy earth moving machinery could be employed to locate subsurface features. If, however, such equipment is not available, then this site can be considered sufficiently identified to allow it to be innundated without further analysis. Site 36Hu6 is sufficiently identified to remove it from further consideration. There does remain, however, some deposit on the nothern sector. If time is available in the future, this deposit could be removed. The objective would be to add more information to the possibility of a Middle Woodland component at the site. Site 36Hu13 should be surface collected again in the Spring of 1967. If no surface remains are discovered, then this site can be removed from further consideration.

Six more sites remain to be tested in the future: 36Bd39, 36Hu10, 36Hu25, 36Hu26, 36Hu27, and 36Bd40 (Smith 1965: 42). Several miscellaneous suggestions - analysis of local collections and photographs - were made in reference to sites 36Hu5, Hu 14, Hu 15, Hu 19, and Hu 24 by the 1965 survey (Smith 1965). This work remains to be completed. Extensive surface collecting and perhaps testing at 36Hull would yield a fine collection of 19th century historic artifacts. Finally, a list of items for research in the local county records was made by the 1965 survey (Smith 1965: Table 4). This work remains to be carried out.

Figure 3

a. 36Bd36. Pitted hammerstone of fine-grained sandstone with a bi-pit pecked on one horizontal face and a single pit on the other. A66.2.99

b. 36Bd36. A pitted hammerstone of an irregular fine-grained sandstone or siltstone with both faces showing evidence of pecking over their entire surfaces. May have been used as a receptical for grinding. A66.2.48

c. 36Bd36. A ground stone tool of fine-grained sandstone with one surface ground. A66.2.42

Scale: Actual Size

Figure 3

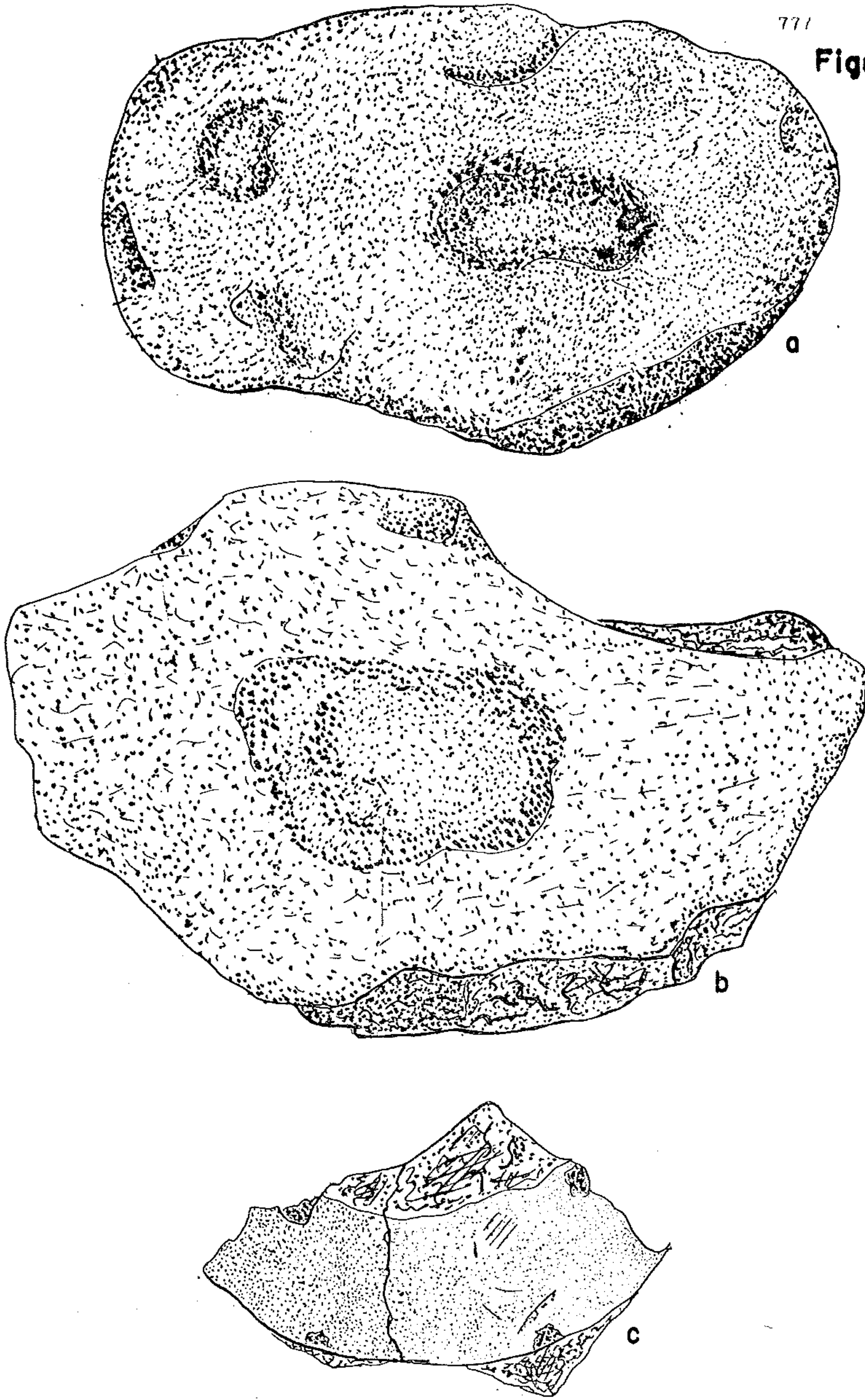


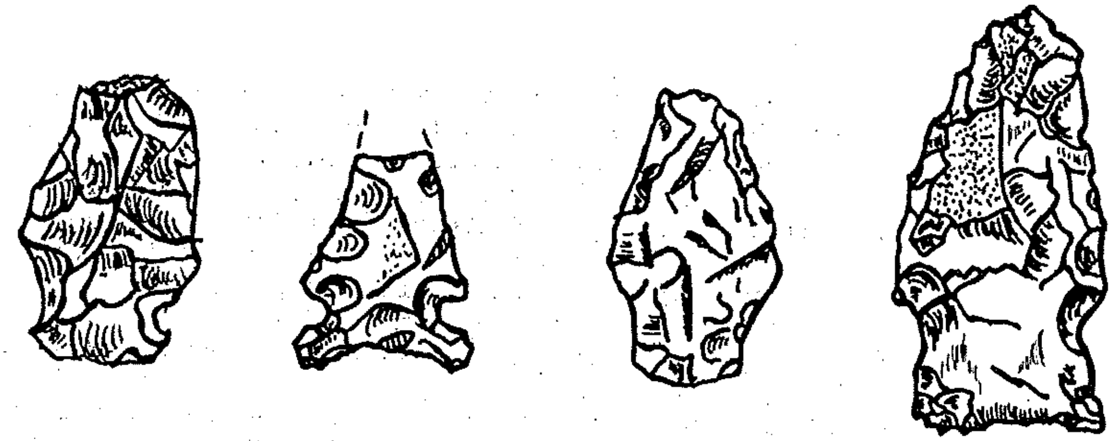
Figure 4

a. 36Bd36. Archaic points. A66.2.58 (Sheep Rock Type 12), A66.2.6, A66.2.9, A66.2.94.

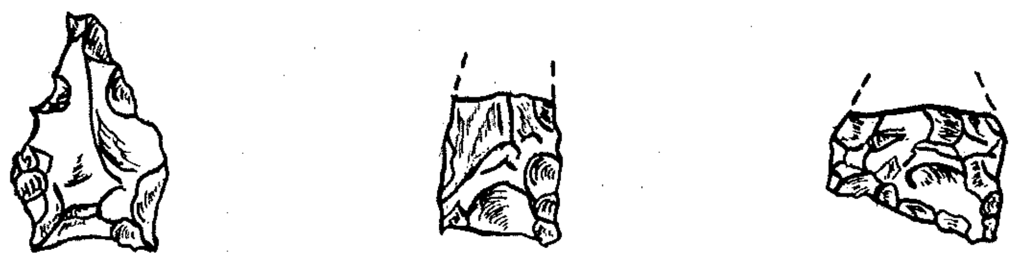
b. 36Bd36. Triangular points representing a Late Woodland component. A66.2.88 (Sheep Rock Type 41), A66.2.104 (Sheep Rock Type 39), A66.2.38 (Sheep Rock Type 37), A66.2.67 (Sheep Rock Type 41), A66.2.44 (Sheep Rock Type).

Scale: Actual Size

# Figure 4



a



b

Figure 6

a. 36Hu9. Side scraper with secondary retouching along two-thirds of its long side which also extends around the short end of the tool. A66.3.58.

b. 36Hu9. A flint end scraper formed from a slightly side-notched Archaic point which was broken and then had the fractured end retouched. All that remains of the point is its haft element and a small portion of the blade which now functions as a beveled end scraper. A66.3.53.

c. 36Hu9. Ovate knives made of a shale-like material or siltstone; primary chipping. Edges exhibit wear which suggests a knife function. A66.3.120, A66.3.121.

Scale: Actual Size

**Figure 6**

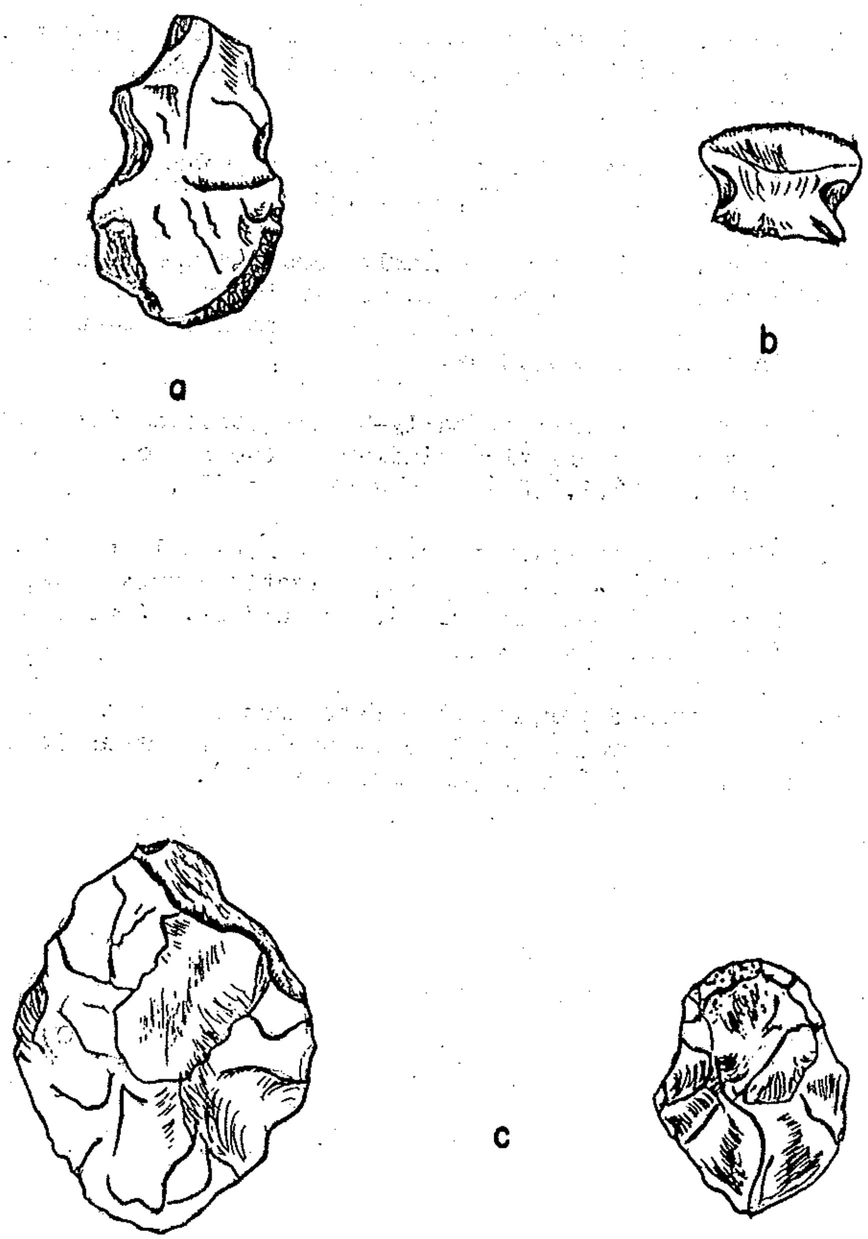


Figure 7

a. 36Hu9. Triangular points of flint and chalcedony. A66.3.51 (Sheep Rock Type 39), A66.3.112 (Sheep Rock Type 37).

b. 36Hu9. Triangular shaped blanks; probably unfinished artifacts. A66.3.17, A66.3.32.

c. 36Hu9. This possible Early Woodland specimen exhibits a modified lanceolate form. It is broken and the end shows secondary retouching to form a blunt-ended instrument. A66.3.54.

d. 36Hu9. Specimen of Early-Middle Woodland date having many characteristics similar to the Racoon Side-notched point. A66.3.130 (Sheep Rock Type 27).

e. 36Hu9. This point vaguely resembles a Transitional "fishtail" - side-notched, slightly convex base, long blade, and unevenly sloping shoulders. A66.3.33 (Sheep Rock Type 35).

f. A retouched version of a Late Archaic point - straight, slightly ground base, side-notched, right-angle shoulders. A66.3.131 (Sheep Rock Type 13).

Scale: Actual Size

# Figure 7

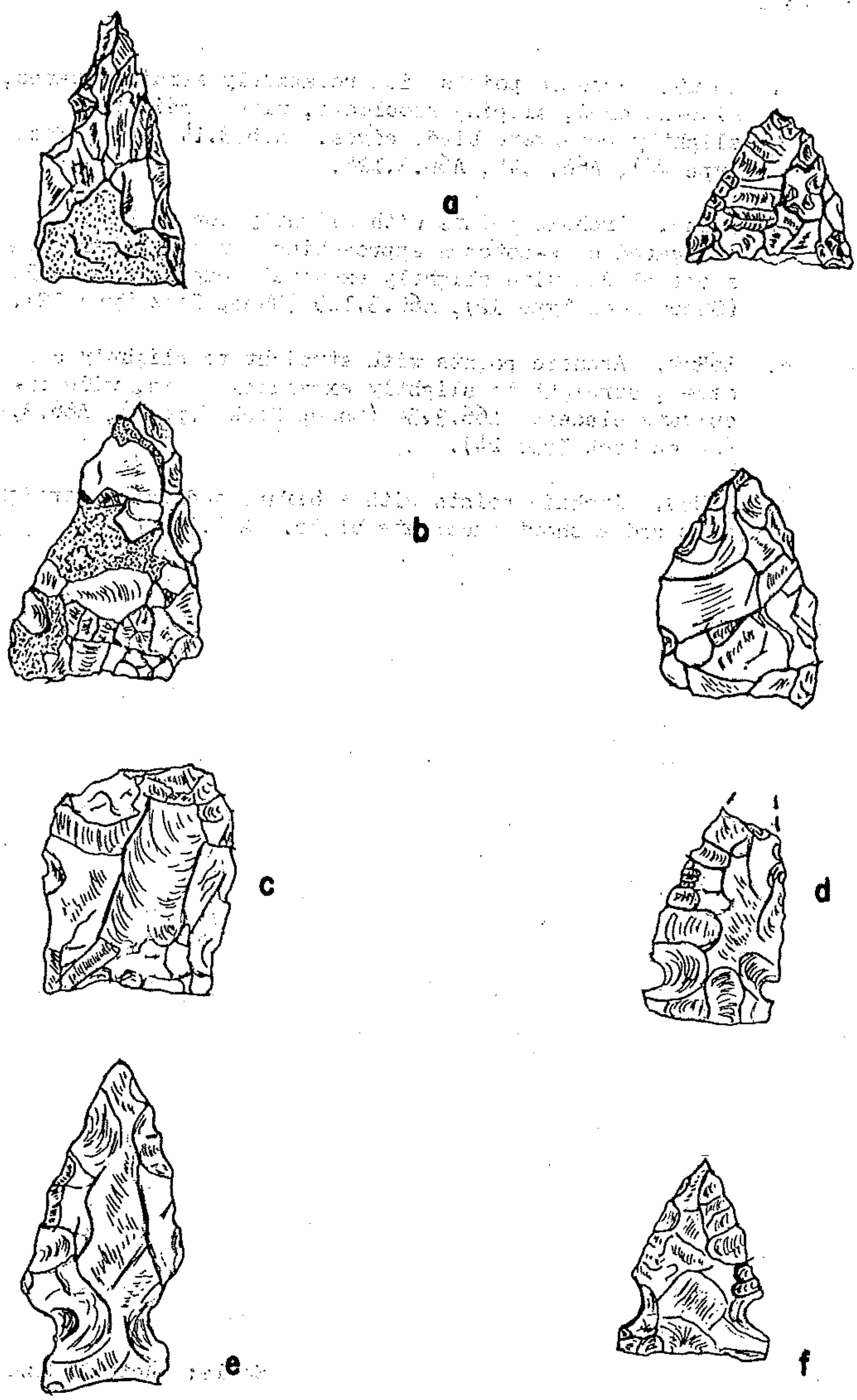


Figure 8

a. 36Hu9. Archaic points with relatively straight bases, side-notched, sloping shoulders, with straight or slightly encurvate blade edges. A66.3.14 (Sheep Rock Type 21), A66.3.44, A66.3.124.

b. 36Hu9. Archaic points with slightly convex bases, elongated side-notches approaching expanded stems, and short blades with slightly excurvate edges. A66.3.92 (Sheep Rock Type 12), A66.3.129 (Sheep Rock Type 12).

c. 36Hu9. Archaic points with straight to slightly convex bases, straight to slightly expanding stems, wide excurvate blades. A66.3.34 (Sheep Rock Type 2), A66.3.132 (Sheep Rock Type 24).

d. 36Hu9. Archaic points with a bifurcated base, straight stem and a short excurvate blade. A66.3.7.

Scale: Actual Size

Figure 8

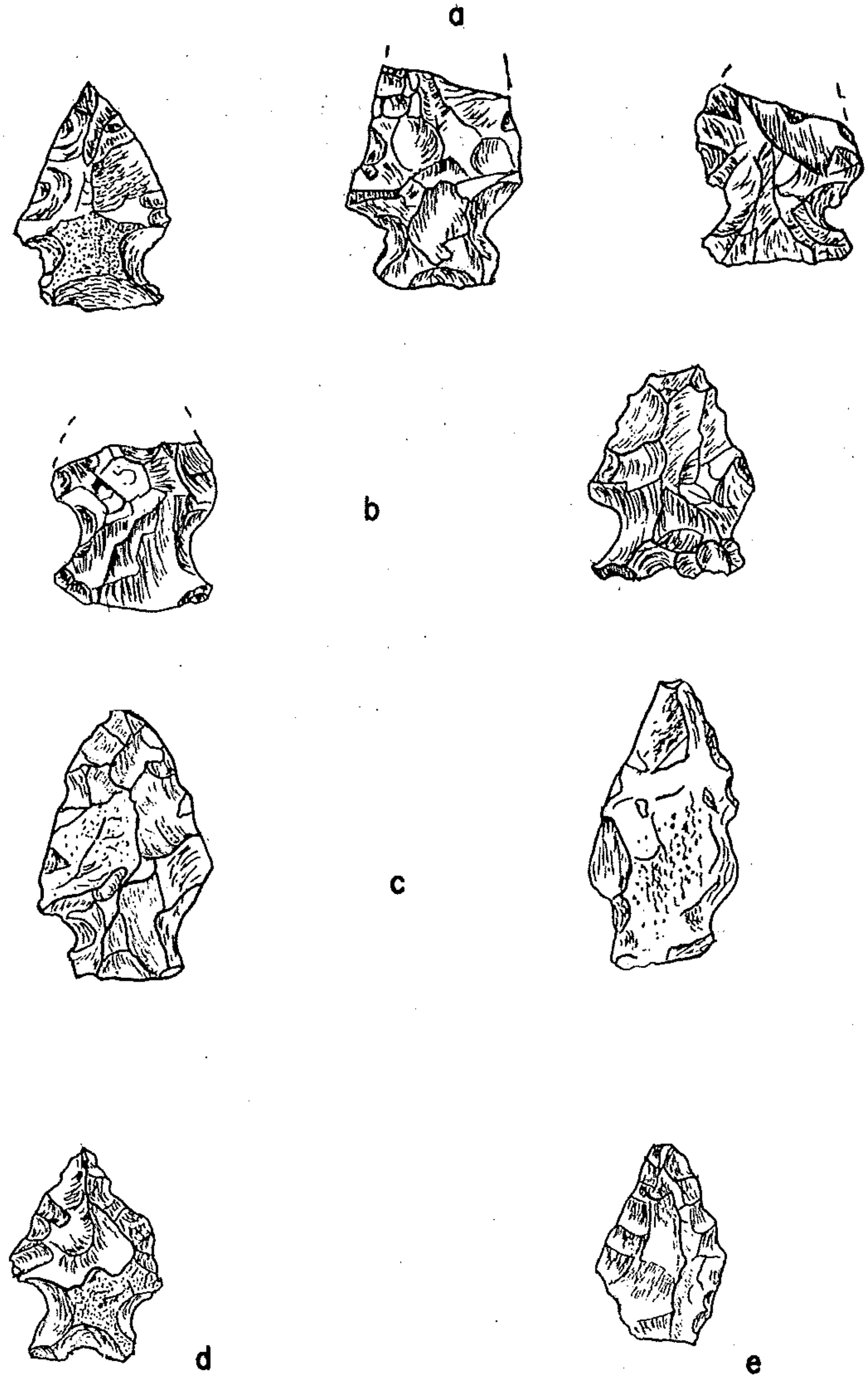


Figure 9

36Hu9. Miscellaneous Archaic pieces of projectile points.
A66.3.83, A66.3.123, A66.3.15.

Scale: Actual.Size

Figure 9

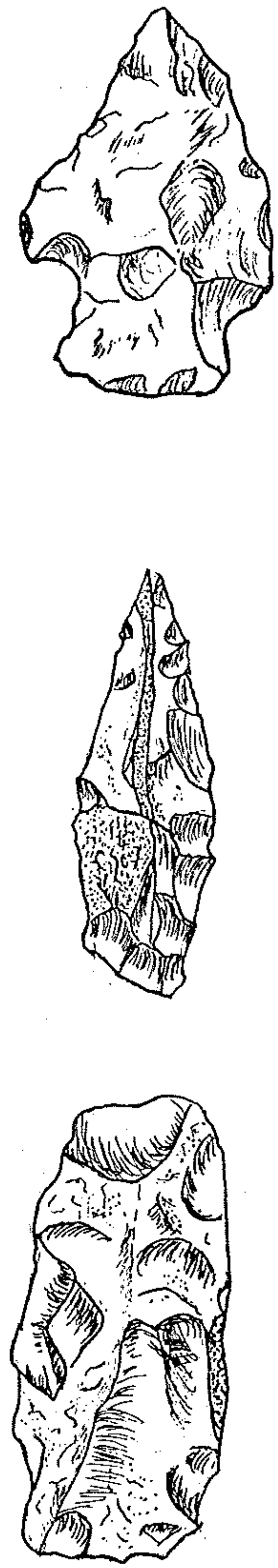


Figure 11.

Muller or anvil stone. A66.4.90.

Scale: Actual Size

Figure II

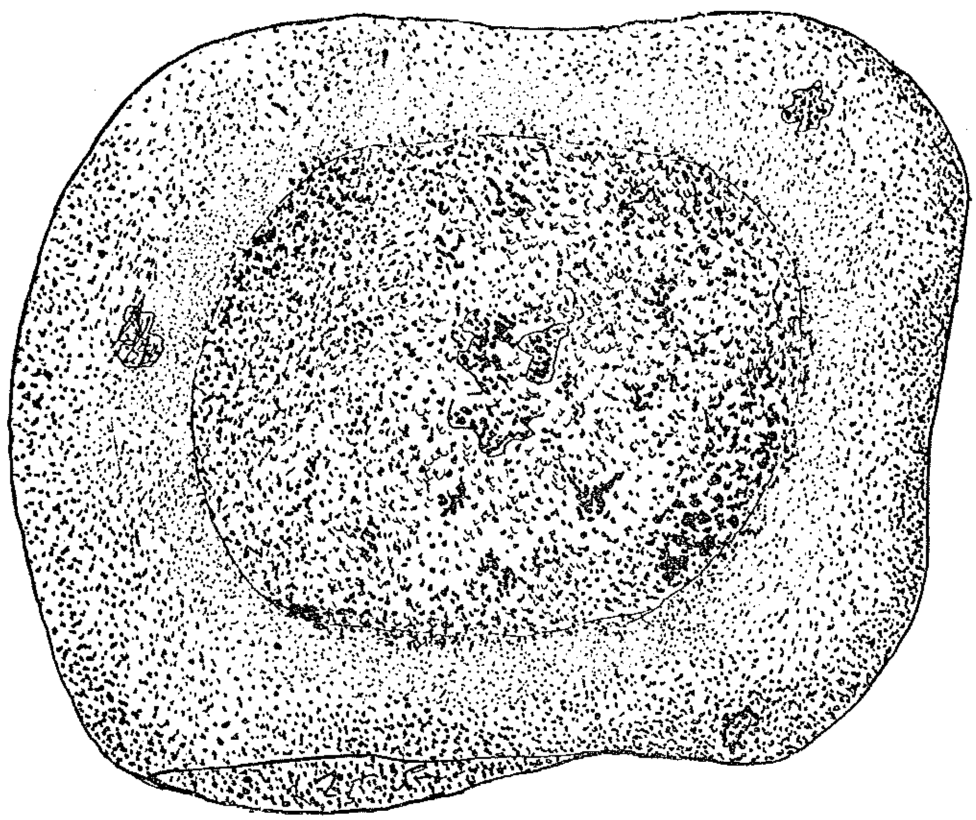


Figure 12

a. 36Hu6. Triangular points from upper 14 inches of deposit. A66.4.15 (Sheep Rock Type 37), A66.4.77 (Sheep Rock Type 38), A66.4.36 (Sheep Rock Type 37).

b. 36Hu6. Questionable point found 14 to 17 inches below surface. A66.4.83.

36Hu6. Elongated projectile points which could represent a specialized tool of the Late Woodland period. Found 6 inches below the surface. A66.4.47, A66.4.46, A66.4.38 (Sheep Rock Type 15 or 18).

36Hu6. Archaic points found 25 to 28 inches below surface. A66.4.67 (Sheep Rock Type 13), A66.4.68 (Sheep Rock Type 13).

Scale: Actual Size

Figure 12

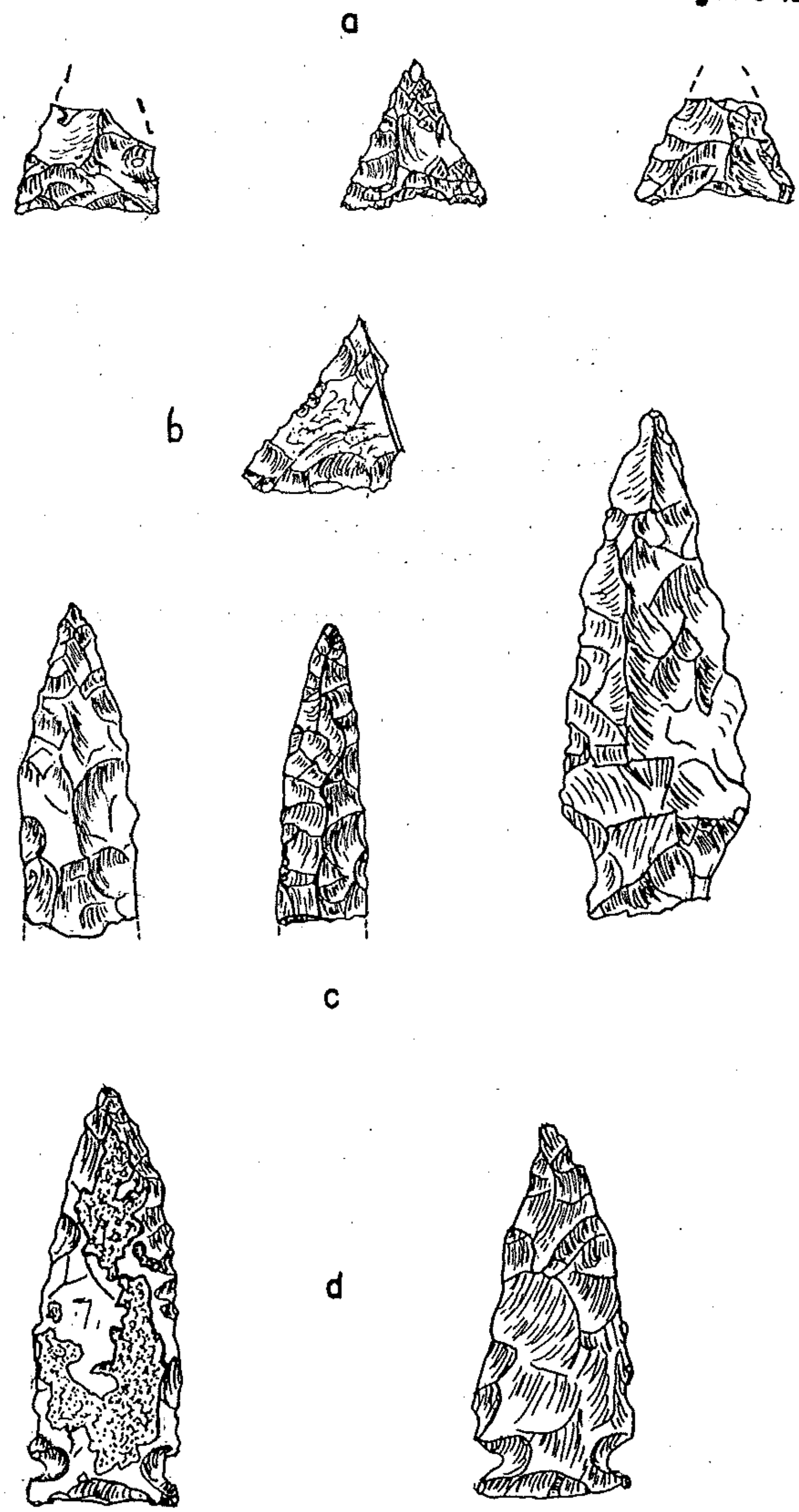


Figure 13

a. 36Hu6. Bone tools found in 1965. A66.4.89, A66.4.88.

b. 36Hu6. Bone awl made from long bone fragment. Smoothing exhibited along 20 mm of its total 58 mm length. Found 6 inches below surface. A66.4.40.

c. 36Hu6. Bone awl made from a scapula fragment. Smoothing occurs along 58 mm of its total 93 mm length. A66.4.78.

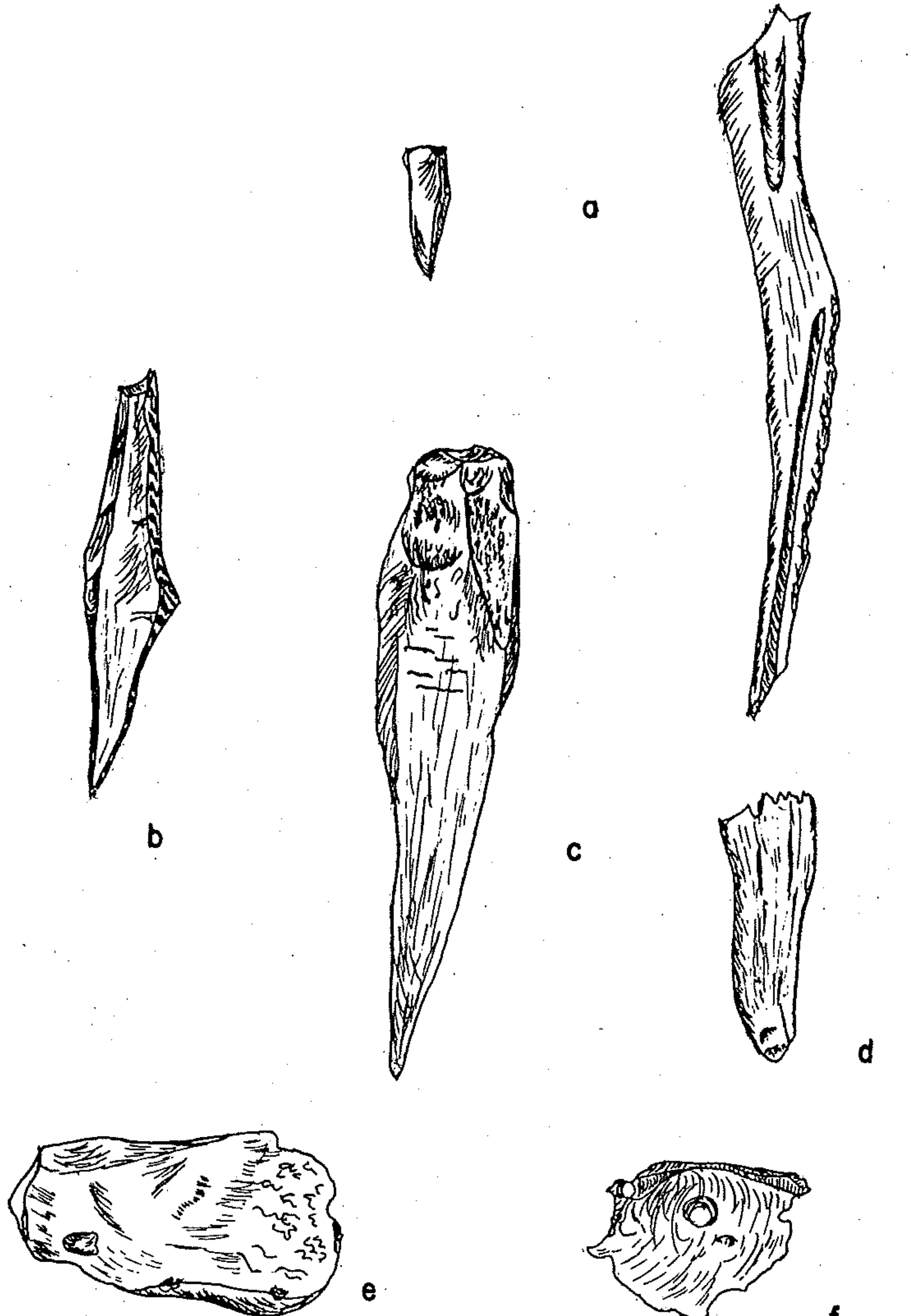
d. 36Hu6. Antler tip that may have been used as a flaking instrument. A66.4.87.

e. 36Hu6. Portion of a long bone with an artificially rounded end. A66.4.65.

f. 36Hu6. Shell fragment which may have been used as an ornament. A66.4.42.

Scale: Actual Size

Figure 13



| Provenience | No. of Plain | No. of Cord | No. of Rims | No. of Incised | Approx. Avg. Size | Max. Size | Thickest Piece | Total No. of Sherds | Pipe Frag. |
|---|---|---|---|---|---|---|---|---|---|
| B 7:Topsoil (A66.2.54) | 412 | 69 | 13 | 1 | 15 mm | 25/36 mm | 10 mm | 495 | 5 |
| B 5:Topsoil (A66.2.57) | 267 | 62 | 5 | 3 | 15 mm | 28/34 mm | 10 mm | 337 | 1 |

TYPE AND DISTRIBUTION OF POTTERY SHERDS AT 36Bd36

Table 1

Table 2

## LITHIC DEFINITIONS

| | |
|---|---|
| Chalcendony | - Translucent; black, gray, bluish-white, white. |
| Chert | - Non-translucent; light gray to white or creamy white. |
| Flint | - Non-translucent; dark brown to black. |
| Jasper | - Non-translucent; yellow, orange, red, reddish-brown. |
| Quartz | - Milky white to transparent. |
| Limestone | - Effervescent under HCl. |
| Rhyolite | - Aphanitic groundmass with phenocrysts of quartz and potassium feldspar; white or light yellow, brown, or red; flow banded. |

| Catagory | Catalogue Number | Square | Material | Description | Function |
|---|---|---|---|---|---|
| Unifacial Modified Flake | A66.2.52 | B7 | Bald Eagle Jasper | 2nd retouch along 2/3 of one face of one edge | Side Knife |
| Unifacial Modified Flake | A66.2.39 | B5 | Siltstone | 2nd retouch along entire length of one face of one edge (25 mm) | Side Knife |
| Unifacial Modified Flake | A66.2.61 | B5 | Flint | 2nd retouch along one face of three edges of flake (35 mm) | Flake Point |
| Unifacial Modified Flake | A66.2.69 | B7 | Jasper | 2nd retouch along one face of two edges of flake | Flake Point |
| Unifacial Modified Flake | A66.2.51 | B7 | Flint | 2nd retouch along one face of one end (14 mm) | Unknown |
| Unifacial Modified Flake | A66.2.91 | B5 | Flint | 2nd retouch along one face of one end (12 mm) | End Scraper |
| Unifacial Modified Flake | A66.2.74 | B7 | Flint | Primary flaking over one surface | Unknown |
| Bifacial Modified Flake | A66.2.40 | B5 | Jasper | Primary flaking on both faces of one edge (29 mm) | Knife |
| Bifacial Modified Flake | A66.2.41 | B5 | Chert | 2nd flaking on both faces of one edge (16 mm) | Knife |
| Bifacial Modified Flake | A66.2.50 | B7 | Flint | 2nd flaking on both faces of one edge | Knife |
| Bifacial Modified Flake | A66.2.112 | B7 | Flint | 2nd retouch along two faces of one end (7 mm) | Unknown |
| Bifacial Modified Flake | A66.2.2 | B7 | Shy Beaver Jasper | | |
| Bifacial Modified Flake | A66.2.5 | B7 | Siltstone | Both surfaces show primary flaking | Unknown |
| Bifacial Modified Flake | A66.2.73 | B7 | Jasper | Both surfaces show primary flaking | Unknown |
| Bifacial Modified Flake | A66.2.87 | B5 | Jasper | Both surfaces show primary flaking | Unknown |
| Bifacial Modified Flake | A66.2.95 | B5 | Flint | Both surfaces show primary flaking | Unknown |

CHIPPED STONE ARTIFACTS OF 36Bd36

Table 3

| Section | Provenience | Approx. depth below surface | No. of sherds | Temper | Color | Design | Variety and Association |
|---|---|---|---|---|---|---|---|
| North | 265°: 31 in. b.d. | 3 in. | 1 | fired shell | Ext: Int: Buff to Yellow | Ext: Plain<br>Int: Plain | 1: Susquehannock |
| North | 287°: 20 in. b.d. | 1-2 in. | 1 | fired shell | Ext: Int: Buff to Yellow | Ext: Plain<br>Int: Plain | 1: Susquehannock |
| South | None | None | 1 | fired shell | Ext: Int: Buff to Yellow | Ext: Plain<br>Int: Plain | 1: Susquehannock |
| South | 220°: 44 in. b.d. | 6 in. | 1 | Essent. Qtz. with very minor chert | Ext: Black<br>Int: Black | Ext: Cord with cross-hatch<br>Int: Plain | 2: |
| North | 250°: 34 in. b.d. | 9 in. | 6 | 3 chert<br>3 chert | Ext: Int: Brown to Black<br>Ext: Int: Brown Brown-Black | Ext: Cord<br>Int: Plain<br>Ext: Broad, Shallow Incision<br>Int: Plain | 4: |
| North | 250°: 31 in. b.d. | 9 in. | 19 | chert | Ext: Int: Brown | Ext: Cord<br>Int: Plain | 3: |

SUMMARIZATION OF POTTERY

Table 4

# A CULTURE HISTORY OF THE SHEEP ROCK SHELTER SITE

by

Joseph W. Michels

ABSTRACT

Nine components representing 8,000 years of occupation of Sheep Rock shelter are summarized. Special attention is directed to cultural affinities with other regions observed in the artifact assemblages of the various components, and a general thesis is put forward to explain the presence of these resemblances. The thesis states that the nature and extent of cultural affinities between distantly separated local populations within and adjacent to the Ridge and Valley Section of Central Pennsylvania can, in some measure, be explained by the nature of the contact situation; and that for this physiographic region the contact situation is a function of settlement pattern and population density.

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LIST OF ILLUSTRATIONS

## INTRODUCTION

One of the more valuable dividends that result from accomplishing a thorough preliminary analysis prior to completion of field work is the privilege of speculation. The preceding chapters contain an abundance of information on the occupational history of Sheep Rock, a modest glimpse at a number of other prehistoric settlements in the vicinity of the Raystown River, and a rather extensive picture of the ecological setting. All of this information is to be heavily supplemented through additional field excavation and laboratory analysis scheduled for this summer. An estimated 1600 man days of additional activity will have been invested in the Sheep Rock project by September. It is at just such a point that the director ought to seek an interpretation of the evidence so far obtained.

What I have tried to do in the following discussion is to push the available evidence as far, if not somewhat further, than it can go in the preparation of a general sketch of the culture history of the Raystown Region. The treatment is speculative. My object is to generate hypotheses which can be tested by further field and laboratory analysis, thus giving direction and problem orientation to our final period of investigation.

## THE GENERAL THESIS

One of the most interesting aspects of an artifact assemblage is the nature and extent of resemblances between it and other such assemblages located elsewhere. Strong, specific resemblances between elements within two or more geographically separated archaeological components are often regarded as evidence of an historical relationship between the groups, thus archaeologically defined. The nature of this relationship is often not made clear, even when these resemblances are used to date the components, or to define archaeological units such as "tradition," "phase," "horizon," "complex," and "culture area."

Questions concerning the nature of cultural affinities between groups, regardless of whether the groups are archaeologically or ethnographically defined, are fundamentally questions concerning the nature of culture contact.

Within any given geographical or physiographic province it is very likely that only a limited number of types of contact situations prevail among the constituent local populations during any particular historical period. Insight into the nature of these contact situations should therefore contribute to an explanation of the cultural affinities connecting local populations.

The term "contact network" will be used to refer to the multiple interaction links that bind together a number of local populations and make possible culture element diffusion. A contact network is thus the sum total of contact situations between groups that account for culture element resemblances between close or widely separated local populations.

In the Ridge and Valley Section of Central Pennsylvania, and between it and adjacent regions, the contact network among local populations appears to be a function of settlement pattern and population density. The entire history of the Raystown region of Central Pennsylvania, as viewed from excavations at Sheep Rock and neighboring sites, seems to reveal only two fundamental settlement patterns. The earliest, and most persistent, was a nomadic pattern of multiple encampments by hunter/gatherer bands whose territorial ranges overlapped. The second settlement pattern was a dispersed sedentary hamlet pattern.

It is my thesis that the nature and extent of cultural affinities between distantly separated local populations within and adjacent to the Ridge and Valley Section of Central Pennsylvania can, in some measure, be explained by the nature of the contact situation. Secondly, that for this physiographic region the contact situation is a function of settlement pattern and population density.

## THE ECOLOGICAL SETTING

Sheep Rock shelter is located on the Raystown Branch of the Juniata River, in Huntingdon County, Pennsylvania. The Raystown River and its bordering ridges are part of the Ridge and Valley province of the Appalachian Highlands - an area characterized by long, narrow, even-crested ridges with lowlands in between. The region was an ideal setting for the life-way of the Archaic hunter/gatherer, and appears to have been occupied by such groups from the terminal period of the Early Archaic until the beginning of the Middle Woodland - when the introduction of farming affected the traditional Archaic subsistence program.

The pre-colonial land cover consisted of mixed hardwoods and conifers. Oak, walnut, beech, hickory, and other nut-producing trees provided an abundant and easily recoverable source of fat and carbohydrate. Undergrowth included many varieties of edible berries and other fruit-producing trees and shrubs. The forest setting supported a large and permanent population of white-tailed deer, raccoon, beaver, woodchuck, and muskrat. The streams and rivers of the area contained suckers, bullheads, eels, striped bass, shad, walleye, and fallfish. Shell fish, water fowl, and turtles were also conspicuously present. Winters were cold but relatively short. Summers, on the other hand, were long and warm.

Sheep Rock was a very livable shelter. Its high-vaulted overhang permitted sunlight to reach the living floor all during the day, yet the orientation of the rock face protected the shelter from the prevailing winds, and kept large areas of the floor free from moisture all during the year. At present, approximately 3600 square feet of living area is located back of the drip line. The earliest occupants of the shelter, however, had to make do with only half as much living area. This was due to the fact that the shelter has a naturally sloping floor, and only as a result of the gradual accumulation of midden, eroded shale, and roof fall was the horizontal living platform able to achieve its present size.

It is estimated that the shelter lies only fifty or sixty feet above the bed of the original stream and an equivalent distance back from the original water line. The Raystown is a rapidly moving stream 10 to 12 inches deep, resting on large water-worn conglomerates with shale beds exposed along the watercourse. Where the shale beds are exposed there are pools with a depth of three to five feet, but where the stream is largely rock rapids are common.

## THE EARLY ARCHAIC COMPONENT

The presence of an Early Archaic component (Ritchie 1967:178) is still debatable, but such a component has been provisionally postulated on the assumption that the two Kirk Corner-Notched projectile points found at Sheep Rock in an appropriate stratigraphic position can be attributed to it. Hopefully, further excavation this coming summer will permit us to resolve this question.

If our assumption concerning the presence of an Early Archaic component is correct, it would appear that the initial human occupation of the shelter was a consequence of the intrusion of nomadic hunter/gatherer bands from the south into what may then have been unoccupied forests of Central Pennsylvania. The trait resemblance between Sheep Rock and archaeological components located in the North Carolina Piedmont and adjacent area suggests that there existed a contact network extending southward and linking together widely distributed bands during this initial period of shelter occupation.

The extent of shelter utilization during this early period of occupation is not yet clear since only a small portion of the midden area has been excavated down to 140 inches below datum where the artifacts asserted to be Early Archaic are found. It would appear, however, that the nature of utilization conforms closely to that attributed to the Middle Archaic component. Artifacts assigned to the Early Archaic component owing to their subordinate stratigraphic position relative to the Kirk points include an ovate knife with a serrated cutting edge, a utilized flake scraper, a celt-like fragment with the bit area bifacially ground, and a crude celt-like fragment made from quartzite.

Many lines of evidence point to a nomadic settlement pattern. The absence of storage pits and the low artifact yield indicate transitory, intermittant habitation at the shelter. The fact that this component constitutes the initial human occupation of the shelter indicates that band mobility was sufficient enough to lead to the exploration of this particular river valley. And finally, the presence of a culture-element resemblance between Sheep Rock and sites so far to the south during a time period when the population of the whole area is believed to have been so small and so widely dispersed demands the proposition that these bands were ranging over very great distances. Such a nomadic settlement pattern would result in periodic encounters between hunter/gatherer bands whose territorial ranges overlapped.

Central Pennsylvania may therefore have been a frontier area, both demographically and culturally, relative to geographical areas further to the south, a frontier area inhabited by a population of very low density but of high mobility.

## THE MIDDLE ARCHAIC COMPONENT

The Middle Archaic component is represented by a six-foot thick deposit consisting of midden soils, zones of charcoal and ash, coarse shale and rockfall. Two burials are assigned to this component - a mature adult and an infant. Fire areas appear to be numerous, but so far no storage pits have been discovered. The artifact yield is low, but the assemblage seems clearly to denote several of the activities associated with a domestic economy: hunting, hide preparation, food preparation, and stone implement manufacture.

On the basis of projectile point styles, strong, specific resemblances can be seen between Sheep Rock and the early Laurentian tradition of New York state, and between Sheep Rock and sites located in the Carolina Piedmont area. Such wide-ranging affinities, during a time when the northeast still seems to have possessed only a small population, suggests the continuation of a nomadic settlement pattern which could insure regular inter-band contact.

The presence of burials, substantial midden soils, fire areas, and moderate amounts of stone implement manufacturing residue seems to indicate that the nature and duration of many of the occupational episodes was sufficient to warrant the term "settlement," as opposed to "camp." At this time, the occupants of the shelter would have had at least 2400 square feet of living floor arranged in a linear strip 30 feet wide and 80 feet long - large enough, possibly, to accommodate four or five families. This does not seem unreasonable, since the food resources of the Raystown vicinity appear to have been adequate to sustain a band for long periods of time during the summer and fall seasons without the need for extraordinary hunting or foraging expeditions, or for an elaborate storage technology.

A clearer picture of the extent of shelter use during various seasons of the year will hopefully emerge from this summer's work. It seems likely, however, that if additional evidence points to prolonged occupational episodes, it will not thereby nullify the essentially nomadic status attributed to the population of this phase. Shelter occupation would probably still be characterized as intermittant.

An alternate hypothesis, and one which seems more promising in relation to the Late Archaic component, is that the shelter and surrounding vicinity were exposed to more or less continuous exploitation during large segments of the year by numerous bands whose territorial ranges overlapped and who possessed, in some instances, contrasting cultural traditions. In such a case, the impression of prolonged episodes of occupation by a single band may simply be the function of multiple encampments by different bands during each season. An important drawback to this hypothesis, as it is applied to the Middle Archaic, is that it requires us to postulate a relatively high population density for the immediate Ridge and Valley Region.

The demographic picture one might conjecture for this period, however, would not seem to support such a postulate. Rather, one might be wiser to postulate a significant increase in population density over that attributed to the Early Archaic, but still quite light and still below the optimum population density of the region, that is, the population density which the ecological resources of the area are capable of supporting given a hunter/gatherer subsistence program. Furthermore, the evident livability of the shelter, both in warm and cold weather, would seem to have encouraged maximum utilization by any group who happened to come upon it, generating a certain level of reluctance to give the shelter up as long as the area could still conveniently accommodate group subsistence.

The situation that made possible the cultural affinities identified in this component seems, therefore, to have been inter-band contact resulting from a pattern of settlement mobility. However, it is suggested that the frontier-like quality of the Early Archaic contact network had disappeared as a result of an increase in the size of the permanent population of the Ridge and Valley Region, and as a result of the manifestation of a Northern cultural tradition only a short distance away. The increase in population would have resulted in an increase in population density which, in turn, would have facilitated inter-band contact and discouraged the kind of wide-ranging mobility postulated for the Early Archaic. A band would be permitted to make repetitious use of a limited number of different habitation sites within a less extensive territorial range. The manifestation of a different cultural tradition (the Laurentian) in the adjacent region to the north of Central Pennsylvania permitted the Middle Archaic component at Sheep Rock to exhibit the kind of multi-directional contact network that seems to conform best with the demographic and settlement factors already described.

## THE LATE ARCHAIC COMPONENT

The Late Archaic component is located in an 18-inch stratum consisting of midden soils, charcoal and ash, dust and fine shale, and appears to be stratigraphically partitioned by overlying and underlying sterile strata. One adult burial is associated with this component. Fire areas dominate large portions of the deposit and, together with the high artifact yield, suggest extensive episodes of habitation. A wide range of domestic economic activities can very likely be inferred from the range of artifact forms recovered, while the basic hunting/foraging subsistence base clearly seems to continue.

An intensive and highly restricted contact network linking together bands distributed through the Ridge and Valley Region from Central Pennsylvania to New York State can be postulated for this phase. Over 50 percent of the projectile points belong to the Brewerton Complex of New York, and all of the other diagnostic artifacts reveal northern cultural affinities. The evidence seems clearly to suggest that Sheep Rock was well within the radius of the Laurentian tradition. A possible clue as to the nature of the contact situation accounting for such strong resemblances may lie in the marked proliferation of projectile point styles characterizing this component. Besides suggesting a special focus on hunting, such stylistic variety lends support to the hypothesis that Sheep Rock was utilized by a number of different bands at various times of the year. Each band may have possessed a micro-tradition with respect to point style which permitted a limited range of variation. The archaeological manifestation of multiple-band utilization of the shelter would be just such a proliferation of form.

An augmented rôle for hunting, as suggested by the aesthetic focus on hunting weaponry, might very well have led to greater band mobility and to a complex pattern of overlapping band territories. As mentioned earlier, such a settlement pattern would require a relatively dense population, one where nomadic bands were sufficiently contiguous that their foraging and hunting ranges would tend to frequently overlap. Such an increase in population density is suggested by the observation that among the thirty-five other sites identified within the Raystown Dam Flood Basin the archaeological components represented were often Late Archaic or Woodland, but very seldom components which were earlier, although this may be due to differential recovery during site survey.

It appears likely, then, that the circumstances that account for the comprehensive as well as highly specific resemblances between Sheep Rock and geographical areas to the north and east were: (1) a marked increase in population density, (2) a marked increase in population mobility, and (3) the resulting intensification of inter-band contacts due to the nature of a system of extensively overlapping territorial ranges.

## THE TRANSITIONAL COMPONENT

The material culture remains of the Transitional component were recovered from a highly restricted area of the shelter floor consisting of no more than 600 square feet. Within that area we recovered 70 steatite vessel fragments, four varieties of Broad Spear points, steatite net sinkers, and notched pebble sinkers.

This clearly seems to be a different kind of occupation than those of the Archaic era. Instead of band groupings consisting of four or five families, as postulated for the Archaic, an occupancy of no more than two families seems to conform best to the amount of living floor utilized. The range of projectile point types represented seem to indicate that the shelter was exploited intermittantly all through the Transitional period. The visits at Sheep Rock were probably quite short and probably associated with a specific season of the year. This is inferred from the fact that such a small group (as we have postulated) clearly represents only a band segment; one which was temporarily isolated from other such segments for the purpose of capitalizing on specific foraging or hunting opportunities.

Since a suggestion of band segmentation has not been identified for the preceding Archaic components at Sheep Rock, it may be that a new factor has been introduced that affects the settlement pattern. On the basis of current literature (Ritchie 1965:151) it seems very likely that Transitional bands possessed a special kind of mobility based on canoe navigation of the Susquehanna River system and adjacent waterways. Canoe transportation would permit band segmentation and consolidation to occur with ease, even in instances of wide ranging dispersal. An arrangement such as more or less regular intervals of band segmentation might very well have been highly adaptive given the heavy dependance on hunting often postulated for groups inhabiting minor river and creek systems during pre-horticultural times.

For hunting groups tied to rivers by a preference for canoe transport, the territorial range within which hunting and foraging activities would be carried out might very well be in the form of a linear strip running along both sides of the waterway. Terrestrial mobility would be restricted by material culture possessions (steatite vessels, etc.) that favor river travel which, in turn, might prevent hunting groups from penetrating extensively the woodland that lies back away from navigable streams. Such groups would then be expected to occupy a river bank camp only for the length of time it would take them to exhaust the readily accessible game immediately adjacent to the camp. Following this, they would be expected to move down or up stream a little ways where they would repeat the operation. In such a situation band segmentation would seem to be logical, for then the human population would be distributed linearly in conformity with the distribution of the faunal resources to which they may have chosen to limit themselves.

There is some basis for associating Transitional culture with canoe trasnport and for suggesting that such groups ranged far and wide throughout the river systems of eastern Pennsylvania. One of the most conspicuous grounds for this, other than the nature of the Transitional settlement pattern, is the possession of steatite vessels. Such vessels are heavy and cumbersome, and would be an understandable item in the material culture of a group only if we postulate some convenient means for their transport. Similarly, the raw material from which such vessels are made is found only in specific localities and must have been transported long distances. In addition, a technology of steatite vessel repair was known and practiced, suggesting the likelihood that groups were often separated from their source of supply. More importantly, however, is the fact that Transitional components tend to exhibit evidence of a special riverine adaptation, in the form of a fishing technology. At Sheep Rock, the Transitional component included several net sinkers made from steatite or notched pebbles.

As mentioned earlier, four varieites of Broad Spear points were recovered. They suggest close affinities with both the Susquehanna Soapstone Culture of Pennsylvania and the Frost Island Phase of New York, and thereby indicate long-term relationships between the local population of the Raystown region and groups throughout the Susquehanna River Valley. The contact network is intelligible as the interaction of highly mobile bands of hunter/gatherers for whom a nomadic settlement pattern is restricted to a river system on which multiple inter-band encounters would have been very likely. It is also likely that the contact network may also have had a significant economic dimension. None of the preceding components have revealed any evidence of trade relationships involving the exchange of mutually unavailable commodities. However, transactions involving the exchange of finished and unfinished steatite for food commodities seem very plausible for this culture, and may have contributed to the maintenance of a contact network.

## THE EARLY WOODLAND COMPONENT

The Early Woodland component at Sheep Rock reveals a prevailing affinity to northern cultures. Among these, the Meadowood complex seems conspicuously present. The Juniata Thick type varieties which constitute the Early Woodland ceramic complex at Sheep Rock relate very closely to such types as Vinette I, Half Moon Cordmarked, Fayette Thick, and others. This, in turn, strongly suggests the existence of a wide spread ceramic tradition, and of an extensive contact network through which stylistic and technological innovations could be diffused.

Since the Early Woodland component fails to exhibit any raw materials or finished products that could be classified as exotic, it is unlikely that the contact network that accounts for the area-wide similarities in both lithic and ceramic industries consisted of trade relationships. More likely, Early Woodland peoples continued with a nomadic settlement pattern that facilitated inter-band contact.

The artifact inventory identified as belong to the Early Woodland component at Sheep Rock seems unmistakably to be that of a hunter/gatherer band. One important addition might be present, however, and that is the possibility that pit features might be associated with the component. Such features, if used to cache food, would suggest that a new mode of shelter utilization may have emerged.

Up until this period, the shelter has functioned as a temporary encampment for short or prolonged periods of stay, but without any special domicile status. If storage pits are found to be associated with this component, however, it would suggest that during this period visitors vested the shelter with a sufficiently special residence status that they cached food there. In the event that this is the case, the shelter would then be most appropriately classified as a "central base camp" for a small hunter/gatherer band.

By this time, the living platform at the shelter had reached new proportions as a result of midden accumulation during the preceding periods. A 3000 square-foot area was now available for habitational needs.

Having a central base camp at Sheep Rock would only mildly affect the mobility of the group, since only during the fall and winter months would a central base and satellite camp system seem to be adaptive. Nut harvests, and possibly some minor cultigens (Watson and Yarnell 1966:845), could be recovered and cached away during the fall months, and subsequently exploited as a food reserve during the winter months. During the spring and summer months, however, the traditional exploitation of nomadic foraging would very likely have come into operation, maintaining the contact network.

## THE MIDDLE WOODLAND COMPONENT

The Middle Woodland component witnessed the breakdown of the contact network that had characterized all previous periods of occupation at Sheep Rock. Except for very weak affinities with the Early Point Peninsula complex of New York, and for the presence of two exotic items - a Snyder's type projectile point made of Ohio flint and a piece of biotite mica - the lithic inventory reveals virtually no outside affinities. This is even more true in the case of pottery. Sheep Rock Cordmarked is the pottery type represented in this component. The type does not appear in any of the literature surveyed, nor was it recognized by any of the authorities who have seen it.

Such distinctiveness in material culture seems to point to the virtual isolation of the communities living in the area of Sheep Rock. To achieve such cultural isolation would seem to have required a settlement pattern that did not provide any opportunity for regular contact between distantly settled bands. It is very likely, therefore, that these were sedentary peoples who were able to subsist on the food resources located in the immediate vicinity of Sheep Rock all through the year, year after year. The cultural innovation that permitted this striking shift in settlement pattern may have been the introduction of farming into the region. The technology of food production, even with incipient horticulture, usually requires a community to establish permanent central base camps where the harvest can be safely stored and easily reached. The good possibility that remnants of one or more of the triumvirate - maize, beans, squash - will be found in clear association with a Middle Woodland stratum, the possible presence of storage pits, and the faunal evidence for extensive deforestation (Guilday and Parmalee 1965) that may have begun during this period, are all potentially validating lines of evidence for a horticultural focus having been established by the occupants of Sheep Rock during this phase.

The breakdown in the contact network believed to have resulted from this subsistence shift is understandable in terms of the demographic pattern which is believed to have prevailed at that time: a small population (though of optimum size for a pre-horticultural life way) dispersed throughout the Ridge and Valley terrain in nomadic hunting/foraging bands. The reduction in mobility glimpsed possibly already during the Early Woodland phase, becomes virtually complete, and the wide spaces separating distantly settled bands seem no longer to have been traversed.

A cultural tradition of intensive mortuary ceremonialism was heavily represented in northwestern Pennsylvania and adjacent areas in New York at this time, but except for the two exotic items already mentioned no trace of this tradition or of contact with groups involved in this tradition seems to be present at Sheep Rock.

## THE LATE WOODLAND COMPONENT - EARLY PHASE

During the Late Woodland period, the rapid population growth that always seems to accompany the introduction of horticulture probably began to be felt in the Basin of the Susquehanna River, which was a favorable area for the type of farming attributed to the Woodland groups. Sheep Rock was clearly marginal to this area, and the sedentary hamlets postulated for the Sheep Rock area appear to have been recipients of the cultural innovations occurring in the Susquehanna River Basin during this period.

Current literature (Ritchie 1965:273; Witthoft 1965: 26) seems to suggest that during the early phase of the Late Woodland there were two nuclear cultural spheres within the Susquehanna River Valley, one to the north, called Owasco, and one to the south (around Lancaster County) called Clemson's Island. Both can be identified by their distinctive pottery, and fragments of both types are found in the Sheep Rock shelter.

The marginality of the Sheep Rock inhabitants is expressed in their practice of combining stylistic elements derived from both the Owasco and Clemson's Island traditions into novel combinations. Such a practice, noticeable especially in the pottery, reflects the absence of cultural restraints or "traditionalism" usually found among groups of a homogeneous cultural sphere.

A contact network was thus reinstated during this period. But the nature of the contact situation seems to have changed. Since the settlement pattern of the Sheep Rock inhabitants is believed to have remained a sedentary one, contact appears to have been the consequence of the postulated build-up of population density in the Susquehanna River Valley east of Sheep Rock. If the build-up involved the emergence of closely-spaced river valley settlements, wide-spread attrition of wild game within the immediate vicinity of such settlements would quite likely have resulted. This, in turn, might have led to the practice of long range hunting expeditions by members of these village settlements on their own behalf. The logical objective of such expeditions would have been the sparcely populated Ridge and Valley Region to the west, which harbored a large and relatively unexploited faunal resource.

It therefore seems reasonable to attribute contact to the movement of expeditionary groups into the Raystown area for the purpose of hunting and the inevitable encounters between them and the local inhabitants. There would be no comparable incentive for permanent residents of the Raystown area to make a practice of visiting the Susquehanna River Basin in return.

## THE LATE WOODLAND COMPONENT - LATE PHASE

The small hamlets of maize farmers in and around Sheep Rock appear to have been brought within a single, homogeneous cultural sphere during the latter part of the Late Woodland period. They belonged to the Shenk's Ferry culture which then predominated throughout the Lower Susquehanna River Basin (Witthoft 1965:28). No nuclear area is postulated for the Shenk's Ferry people. They seem to have been widely dispersed: "Their little villages of three or four small rectangular houses were located on small streams and hillocks well off major waterways and trailways; they must have been as inconspicuous then as they are hard to find now" (Witthoft 1959:23). Their settlement pattern may have been a function of their desire to avoid hostilities, which in turn might suggest that local populations of eastern Pennsylvania experienced a chronic condition of insecurity during this time.

The contact network then operating appears, however, to have permitted unrestricted interaction between such hamlets, since the Shenk's Ferry pottery of Sheep Rock is virtually identical to pottery recovered at sites along the Susquehanna River. The nature of the contact situation would seem to be hamlet proximity due to a proliferation of hamlet settlements up in the Ridge and Valley Region. Such a proliferation of hamlet settlements could very likely have been the consequence of the apparent exodus of the relatively large population from the banks of the major waterways of the Susquehanna River system.

## THE PROTO-HISTORIC COMPONENT

The final aboriginal occupation of Sheep Rock shelter involved the Susquehannock Indians who were known to the European settlers of Pennsylvania, and who became widely distributed throughout the Lower Susquehanna River Basin

(Witthoft 1959:19-36). They were Iroquoian speakers who had migrated down into Pennsylvania from New York State. Some archaeological evidence seems to suggest that the Susquehannocks were the raiders whom the Shenk's Ferry people were seeking to avoid (Witthoft 1959:27), and this may explain some of the incipient warfare and raiding which presumably provoked the Shenk's Ferry people into adopting the defensive, dispersed settlement pattern which appears to characterize them.

At some point, probably during the late 1500's, Susquehannock bands established hamlets and villages in the Raystown Region, one of which appears to have been at Sheep Rock. It is from this final occupation that most of the perishable artifacts found at Sheep Rock seem to derive. During this and the preceding Shenk's Ferry occupation, Sheep Rock shelter may have had a strategic value to its inhabitants, since the shelter could have been very efficiently defended in case of a raid.

The varieties of Shultz Incised pottery found at Sheep Rock, regarded as diagnostic of Susquehannock occupation, tend not to express the full range of stylistic variation attributable to the Shultz Incised pottery type. Many of the more elaborately decorated and embellished varieties are not present. This suggests a marginal posture for the occupants of the Raystown area vis-a-vis the main settlement zone of the Susquehanna River Basin.

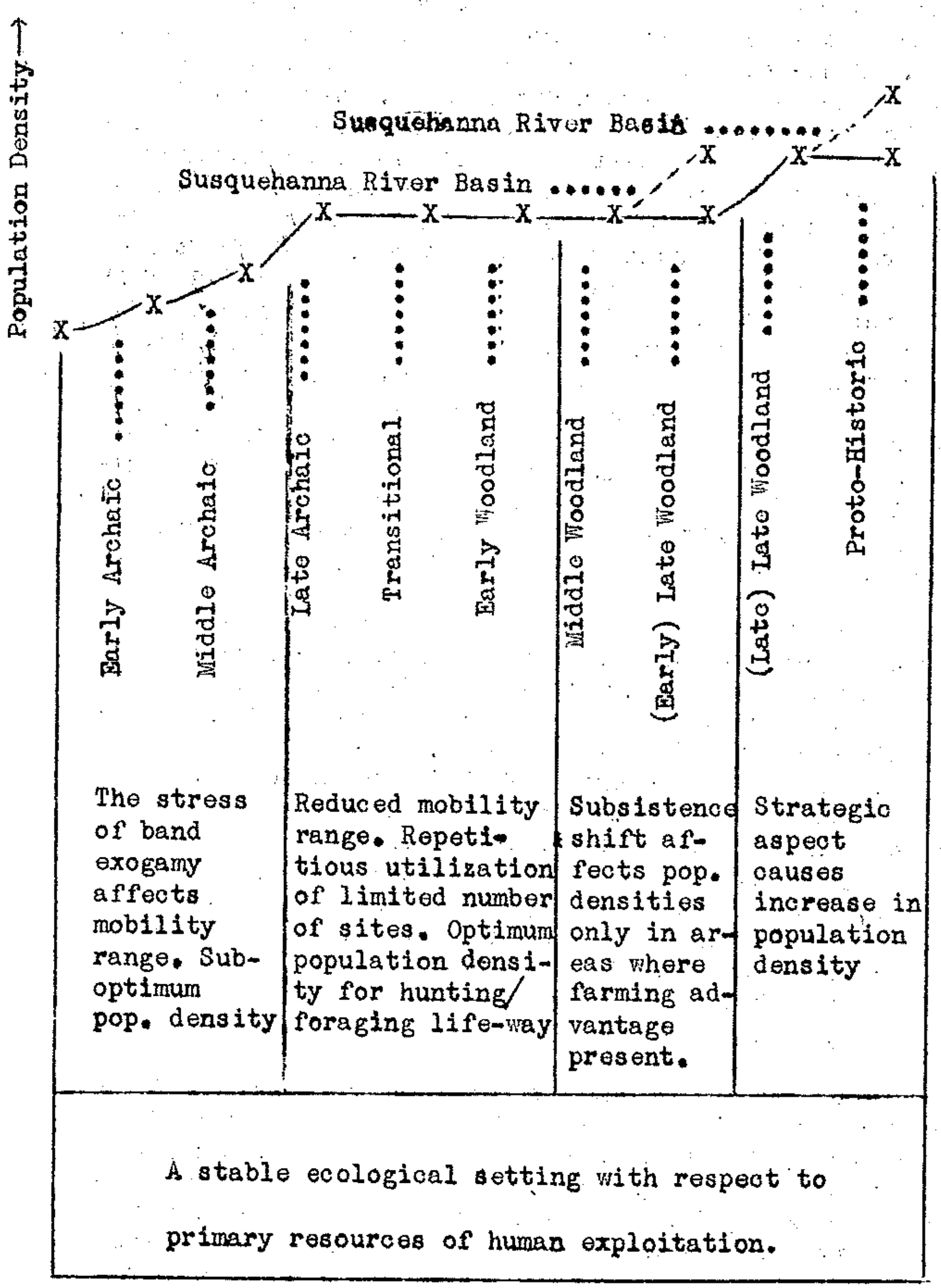
The contact network appears to be somewhat weak, and the contact situation probably corresponds to that postulated for the earlier phase of the Late Woodland period when there were multiple encounters between the local inhabitants and expeditionary gorups coming to the Raystown area from their settlements along the Susquehanna River in search of a favorable hunting theatre.

## SUMMARY AND CONCLUSIONS

What I have provisionally postulated regarding the history of population dynamics and settlement pattern in the Ridge and Valley Section of Central Pennsylvania can be summarized as follows. The shift from Early to Middle Archaic witnessed an increase in population density and a reduction in the distances nomadic bands would range. The shift from Middle Archaic to Late Archaic witnessed a further increase in population density, to an optimum level for a hunting/gathering economic base. This, in turn, further reduced the distances nomadic bands would range. The shift from Late Archaic to Transitional involved no increase or decrease in population size, but rather a redeployment

Figure 1

PROPOSED DEMOGRAPHIC PROFILE
OF THE RAYSTOWN REGION



of the existing population along the navigable waterways of the area. The shift from Transitional to Early Woodland witnessed the development of an incipient storage technology and the adoption of a seasonally limited central-base settlement pattern. No increase in population density is postulated.

The shift from Early to Middle Woodland involved the introduction of farming and the adoption of a dispersed sedentary settlement pattern without a change in population density. Since the basis of the contact network was band mobility, the contact network disappeared. The shift from Middle Woodland to the early phase of the Late Woodland witnessed a build-up of population density in an adjacent area while population density remained stable locally. This resulted in a contact situation of periodic intrusion of non-local personnel for purposes of subsistence. The shift from earlier to later Late Woodland involved the dispersion of the large population of the adjacent region into the Ridge and Valley Sector in the form of dispersed sedentary hamlets. This, in turn, formed the basis of a new contact network based on hamlet proximity by increasing population density in the local area. The shift from Late Woodland to Proto-Historic witnessed a new build-up of population in the adjacent region while the local population remained stable. Contact was again brought about by encounters between local inhabitants and expeditionary groups from adjacent regions.

The history of population dynamics and settlement pattern, as summarized above, does seem to correlate with the nature and extent of cultural affinities between Sheep Rock and other areas, and may be regarded as an illustration of the plausibility of my main thesis. That is, that the nature and extent of cultural affinities between distantly separated local populations within and adjacent to the Ridge and Valley Section of Central Pennsylvania can, in some measure be explained by the nature of the contact situation, and that for this physiographic region the contact situation is largely a function of settlement pattern and population density. A diagram of the demographic profile of the Raystown region as postulated in the above discussion as presented in Figure 1.

I am hopeful that many of the speculations contained within this preliminary sketch of the culture history of Sheep Rock will be resolvable through the further analysis and excavation we have planned. The sheer presence of these speculations will, I am certain, encourage us to seek out corroborative or non-corroborative evidence. Knowing what to look for is a great help in any search, but especially in a search that seeks insight into the extinct lifeways of Pennsylvania man back through eight millenia.

# INITIAL ANALYSIS OF CHARCOAL MATERIALS

by

John H. Azer

ABSTRACT

This paper describes the methodology used in the initial laboratory analysis of the charcoal samples collected at Sheep Rock. It also presents an idea of the size and type of sample subjected to this analysis.

## ACKNOWLEDGMENTS

Much appreciation is extended to Dr. Joseph W. Michels and those members of the 1966 Pennsylvania State University Archaeological Field School who aided the author in the initial analysis of the charcoal samples.

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## INTRODUCTION

Meighan (N.D.: 279) has stressed the fact that archaeologists on occasion have failed to subject their charcoal samples to a critical initial evaluation before they are sent to the laboratory for $C_{14}$ analysis. As a result, they run the risk of acquiring $C_{14}$ dates "which have been derived from poorly chosen and poorly defined samples." In an effort to avoid the pitfalls discussed by Meighan, the major focus of this paper will be centered on the description and delineation of the steps and criteria used in the initial laboratory evaluation of the 134 charcoal samples collected at the Sheep Rock Shelter.

The format of this paper will be first, to describe the steps of the initial laboratory analysis of the charcoal samples; second, to describe the steps and criteria used in the selection of the samples to be submitted to the laboratory for $C_{14}$ analysis. Finally, those areas beyond the scope of this report but which will be included in the final report will be discussed.

## LABORATORY STEPS AND PROCEDURES

In this section the steps and procedures involved in the initial laboratory analysis of the charcoal samples will be described. The sample evaluation was carried out in the Anthropology Laboratory of The Pennsylvania State University. As a direct result of this analysis seven charcoal samples from the Sheep Rock Shelter have been selected for $C_{14}$ analysis. This section will describe the steps and procedures used in the sample evaluation which ultimately led to the sample selection.

### Sample Treatment

As was mentioned in the introduction, 134 charcoal samples had been collected from the Sheep Rock Shelter. These samples had been collected over a seven-year period and display considerable diversity. Because only six to eight samples were to be selected for $C_{14}$ analysis, it was decided to weigh, repackage, retag, and record all pertinent data on each sample. All samples were then unpackaged and subjected to magnifying glass scrutinization for root contamination, dirt, and foreign matter in general. The texture and degree of contamination were recorded on 3- by 5-inch note cards. Next, the sample was weighed (weights being taken to the nearest gram). All samples less than 8 grams were rejected, and no more than 100 grams for any one sample was accepted and packaged. The 8-gram minimum was adopted because many laboratories (for example, Geochron

Laboratories, Inc.) recommend 8 grams as the "desired" amount. It was also felt that since the site had yielded a large volume of charcoal material, the minimum could be established without being overly selective. Also, because the $C_{14}$ analysis is expensive, it would be very unlikely that any sample under 8 grams would be selected for analysis.

On the other hand, it was decided not to package more than 100 grams of any given sample since this is an unnecessarily large amount. Also, very large samples tend to be difficult to handle and package.

Once a sample had been viewed under magnification and weighed on a new section of aluminum foil, the sample was wrapped in the section on which it was weighed. Then the sample was wrapped in another piece of aluminum foil and tagged with a paper label containing the catalog number, the artifact number, and the number of grams. The label was fastened by a wire placed between the two foil layers. By following this procedure it would be very improbable that any potential contaminant could enter the sample.

During the entire repackaging process pertinent data about each sample was recorded on a 3- by 5- inch note card. These cards greatly facilitated later analysis of the sample. The format of these cards can be found in Appendix I.

The following is a summary of the steps taken in the repackaging process of the charcoal samples.

1. Magnification

2. Weighing

3. Repackaging

4. Tagging

5. Sample data card

6. Storing

The major purpose for the above procedures was to establish a core of samples from which several could be selected for $C_{14}$ analysis. Although there are probably alternative procedures, the method employed for this purpose was considered to be the best suited for the samples collected.

## Criteria Used in Sample Evaluation

In this section the criteria used in sample evaluation will be described and defined. These criteria are somewhat arbitrary, though it is strongly believed that for the purposes of this analysis they are logical, functional and meaningful. The criteria used in the analysis of the charcoal samples can be grouped into four categories: first, criteria which relate to the intrinsic nature of the sample; second, criteria which relate to factors extrinsic to the sample; third, those which relate to the location of the sample in the site; and finally, criteria which relate to the gathering and initial packaging of the sample.

Intrinsic Factors. The criterion of weight has already been discussed in some detail. This was a major limiting factor as evidenced by the fact that 37 samples were rejected because they failed to meet the 8-gram minimum.

Another important intrinsic factor is texture. Texture was described as either:

Fine: less than 1/8 inch in diameter;

Coarse: 1/8 to 1/2 inch in diameter; or

Chunk: over 1/2 inch in diameter.

Since it was impossible to measure the components of each sample, these categories were ascribed on the basis of observation alone. The overwhelming majority of the samples repackaged were either coarse or chunks or a combination of both.

The final intrinsic factor is sample type. Only two major types of charcoal samples were encountered in the laboratory analysis: wood charcoal and soot. Generally speaking, wood charcoal is superior to soot due to the fact that it is easier to pinpoint sources of possible contamination in a wood charcoal sample. Also, only three soot samples were collected of which only one met the 8-gram minimum.

Some of the samples were a mixture of charred bone fragments and wood charcoal, while others were mixtures of wood charcoal and partially burned wood. These factors were noted on the data cards.

Extrinsic Factors. All of the extrinsic factors used in sample evaluation relate to possible sources of contamination. Dirt and root contamination were the extrinsic factors most frequently encountered. As long as these sources of contamination are noted, the value of the sample is not necessarily undermined since the laboratory can negate their effects.

Foreign matter other than dirt or roots was less frequent. Under this category would be included small stones, bone, shell or generally any extraneous debris.

The last major source of extrinsic contamination was specified by Stuckenrath (1965: 279). He has emphasized the contaminating effect surface manure can have on charcoal deposits relatively near the surface. Unlike extraneous matter which is observable to the naked eye or under magnification, this source of contamination is not readily apparent. The Sheep Rock Shelter did have a layer of manure over much of the site; therefore, this could be an important source of contamination. Awareness of the possibility is again crucial since the laboratory can treat the sample to remove such contaminants.

Location of the Sample in the Site. Under this category there are several limiting factors. First, there are good stratigraphic profiles for only S5, S10, S15, W5, W10, E5, and E10 proveniences. Also, all proveniences beyond W20 or E25, regardless of the north-south direction, lack sufficient stratigraphic information. Therefore, all samples outside the above boundaries are at present without stratigraphic association.

Another factor related to the location of the sample in the site was whether or not the sample represented a well-defined and described deposit of charcoal as opposed to a more or less isolated find. Samples which represent major charcoal deposits are considered to be more meaningful than those which were found in isolation. It is felt that the former will ultimately yield more complete information on site residence patterns and artifact dating than the latter.

Continuing along the same line, samples from well-defined hearths are very desirable. The researcher must be cautious in identifying a hearth. Fortunately, many of the samples were collected from well-documented hearths and/or living floors.

Another factor related to the location of the sample in the site was whether it was found dispersed over a small area or in direct association. Generally speaking, most samples were congregated and not dispersed. This criterion was used wherever the data permitted.

The last major criterion related to the location of the sample in the site was the presence or absence of cultural materials found in either direct or indirect association with the sample. It was recorded wherever cultural materials were described to have been in either direct or indirect association with a charcoal sample. This area has been only briefly investigated to date; therefore, a complete coverage of this factor will be postponed until the final report.

Collection and Packaging of the Sample. Human error seems to permeate all areas of life and, unfortunately, archaeology has not been granted an exception to the rule. A sporadic source of human error at Sheep Rock was the lack of precise recording of the geological and artifactual perspective of several samples. This was a limiting factor throughout the sample evaluation, although it affected only a minority of the samples. Also, contaminating effect surface manure can have on charcoal deposits relatively near the surface. Unlike extraneous matter which is observable to the naked eye or under magnification, this source of contamination is not readily apparent. The Sheep Rock Shelter did have a layer of manure over much of the site; therefore, this could be an important source of contamination. Awareness of the possibility is again crucial since the laboratory can treat the sample to remove such contaminants.

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In summary, the preceeding section described the four major categories of criteria used in the evaluation of the charcoal samples collected at the Sheep Rock site. Samples were examined according to these criteria in order to obtain information concerning the merits and dismerits of each sample as a candidate for $C_{14}$ analysis.

## SELECTION OF THE SAMPLES FOR $C_{14}$ ANALYSIS

The criteria used in the initial evaluation of the charcoal samples collected at Sheep Rock have been discussed in some detail. Once all the criteria had been applied to the samples, a fairly complete idea of the usefulness of each sample for $C_{14}$ analysis had been obtained. The steps which lead to the selection of seven samples for $C_{14}$ analysis will be elaborated upon in this section.

After the criteria mentioned in the previous section had been applied to all charcoal samples, 52 specimens had survived which were within the range of the master profiles, more than 8 grams, and had adequate data on geological association. Unfortunately, many of the samples lack detailed information on cultural materials found in association with the charcoal.

These samples varied considerably in the degree of contamination, texture and appearance.

The problem was to select from these 52 samples six to eight samples which:

1. had a minimum of contamination;
2. had adequate data on geological and cultural material associations;
3. had been handled properly in the field and laboratory; and
4. had been located in a major charcoal deposit and/or a major stratigraphic layer.

Also, it was important that the samples selected represent the entire period of occupation of the site. By using the seven master profiles and the profile key, it was possible to determine which samples were located in favorable stratigraphic positions.

On the basis of the initial evaluation the following seven samples were selected for $C_{14}$ analysis. The cultural material context of four of the specimens has not yet been determined, although, hopefully, these gaps will be filled in the final report.

6699: Charcoal Sample

| | |
|---|---|
| Provenience: | 0-S10 |
| Grams: | 38 |
| Texture: | mostly coarse |
| Contamination: | slight root and dirt contamination is in evidence; possibility of surface manure contamination; sample appearance is generally good |
| Depth: | level 2c on stratigraphic profile for the pit<br>42 to 45 inches b.d.<br>level B on S10 master profile<br>level 2 on profile key |

2967: Charcoal Sample

| | |
|---|---|
| Provenience: | W5-S10 |
| Grams: | 100 |
| Texture: | chunks |
| Contamination: | some root contamination; sample may be contaminated by surface manure; sample appearance is good |
| Depth: | zone 4b on stratigraphic profile for the pit<br>60 to 64 inches b.d.<br>level C on S10 master profile<br>level C on W5 master profile<br>level 3 on profile key |

6458: Charcoal Sample

| | |
|---|---|
| Provenience: | E25-S5 |
| Grams: | 83 |
| Texture: | chunks |

Contamination: some dirt and root contamination; sample appearance is good

Depth: level f on stratigraphic profile for the pit
74.5 inches b.d.
level B on S5 master profile
level 2 on profile key

6568: Charcoal Sample

Provenience: W10-S5

Grams: 10

Texture: coarse

Contamination: this was a very clean sample in outward appearance

Depth: level b on stratigraphic profile for the pit
88.5 to 96 inches b.d.
level E on S5 master profile
level D on W10 master profile
level 5 on profile key

6588: Charcoal Sample

Provenience: W10-S15

Grams: 62

Texture: chunks to fine

Contamination: slight root contamination; sample was stored in a polyethylene bag; sample appearance is generally good

Depth: 98.5 to 105 inches b.d.
level H on S15 master profile
level E on W10 master profile
level 6 on profile key

This sample was collected from a well defined fire pit.

4431: Charcoal Sample

Provenience: 0-S10

Grams: 64

Texture: chunks to fine

Contamination: slight root contamination; the sample appearance is good

Depth: level $k_1$ on stratigraphic profile for the pit
134 to 138 inches b.d.
level 12 on S10 master profile
level 9 on profile key

6438: Charcoal Sample

Provenience: W10-S10

Grams: 67

Texture: coarse

Contamination: dirt contamination; mixed bone and charcoal

Depth: 155 to 167.5 inches b.d.
levels J and K on W10 master profile
level M on S10 master profile
feature 3

## LIMITATIONS OF THE INITIAL ANALYSIS

The scope and nature of the initial charcoal sample analysis has been presented. By now it is evident that certain areas of potential investigation have been treated only briefly, or not at all. Some of the limits of our investigation were the result of the present lack of data, while others were not considered because they were not deemed of major or crucial importance for the initial evaluation. In this section the limitations of the charcoal sample evaluation will be discussed along with those areas which will receive coverage in the final report.

This evaluation was limited to those areas which could be investigated in the Anthropology Laboratory at The Pennsylvania State University. The laboratory is equipped with the necessities for a descriptive analysis (scale, microscope, etc.).

Because the Sheep Rock site has undergone sporadic excavation since 1957 by several different parties, it has been a long and difficult task to determine the geological and cultural material perspective for each sample. At present much work remains to be done in this area. However, as the information collected at Sheep Rock is analyzed further, additional facts will emerge.

To date only one charcoal sample has been submitted for $C_{14}$

analysis. Early next year six more samples will be submitted. These samples will supply much desired information on site antiquity and chronology, both of which are beyond the scope of this report.

The goal of this analysis was ultimately to furnish a select group of samples for $C_{14}$ analysis which would provide reliable dates for the period of occupation uncovered at Sheep Rock. The degree of success in achieving this goal awaits the actual $C_{14}$ analysis.

## CONCLUSION

The method used in the initial evaluation of the charcoal samples collected at Sheep Rock has been described in the preceeding pages. We fully realize that there are alternatives to this method. Therefore, this process of charcoal sample evaluation should be viewed as but one of several alternatives. In essence all that has been attempted was the construction of a system which would permit an extensive evaluation of the charcoal samples collected at Sheep Rock, enabling the selection of those samples best suited for $C_{14}$ analysis.

Our responsibility to the reader is to report in detail the steps involved in this analysis. Hopefully this responsibility has been met.

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 6615 | W05-S05 | | $f_2$ level | | | 20 |
| A66. 1. | 6617 | W05-S05 | | | | | R[5] |
| A66. 1. | 2967 | W05-S10 | 60-64 | 4b zone | C level | 3 level | 100 |
| A66. 1. | 4488 | W05-S10 | 42-46 | | A level | 1 level | 9 |
| A66. 1. | 3241 | W05-S10 | 55-72 | 3b zone | C level | 2 level | 43 |
| A66. 1. | 4027 | W05-S15 | | 5 level | 1 level | 2 level | 10 |
| A66. 1. | 6463 | W05-S15 | 100 | $e_1$ level | H level | 6 level | 91 |
| A66. 1. | 6491 | W05-S15 | 100 | $e_1$ level | H level | 6 level | 23 |
| A66. 1. | 6677 | W05-S15 | 67 | 5 zone | E level | 3 level | 100 |
| A66. 1. | 3283 | W05-S15 | | | | | R |
| A66. 1. | 6595 | W05-S15 | | | | | R |
| A66. 1. | 6568 | W10-S05 | 88-96 | b level | E level | 5 level | 10 |

CHARCOAL SAMPLES COLLECTED AT SHEEP ROCK

Table 1

Table 1

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 6481 | W10-S05 | | | | | R |
| A66. 1. | 6438 | W10-S10 | 155-167 | | M level | 10 level | 67 |
| A66. 1. | 6482 | W10-S10 | 98 | 3b level | H level | 6 level | 10 |
| A66. 1. | 6570 | W10-S10 | 108 | | F level | 7 level | 46 |
| A66. 1. | 6678 | W10-S15 | 100-108 | | H level | 6 level | 38 |
| A66. 1. | 6588 | W10-S15 | 98-105 | | H level | 6 level | 62 |
| A66. 1. | 6679 | W10-S15 | 100-108 | | H level | 6 level | 95 |
| A66. 1. | 6663 | W10-S15 | 100-108 | | H level | 6 level | 48 |
| A66. 1. | 6479 | W10-S15 | 88-101 | 16 level | G, H level | 5 level | 8 |
| A66. 1. | 2230 | W10-S15 | 60-66 | | 3 level | 3 level | 46 |
| A66. 1 | 6460 | W10-S15 | | | | | R |
| A66. 1. | 1811 | W10-S15 | | | | | R |
| A66. 1. | 6569 | W10-S20 | | | | | R |

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 6664 | W10-S20 | 95-99 | 2a level | E level | 3 level | 100 |
| A66. 1. | 6592 | W15-S00 | | | | | R |
| A66. 1. | 6671 | W15-S00 | | | | | 43 |
| A66. 1. | 6704 | W15-S00 | | | | | 89 |
| A66. 1. | 1955 | W15-S05 | 66-72 | 4 level | D level | 3 level | 11 |
| A66. 1. | 6673 | W15-S05 | | | | | R |
| A66. 1. | 6661 | W15-S15 | | | | | 57 |
| A66. 1. | 1828 | W15-S15 | | | | | R |
| A66. 1. | 1819 | W15-S15 | | | | | R |
| A66. 1. | 6702 | W20-S05 | | | | | 32 |
| A66. 1. | 6675 | W20-S10 | | y level | | | 72 |
| A66. 1. | 6676 | W20-S15 | | y level | | | 42 |
| A66. 1. | 4206 | W20-S15 | 78 | | | | 29 |

Table 1

Table 1

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 2572 | W20-S15 | | | | | R |
| A66. 1. | 574 | W20-S20 | | | | | 11 |
| A66. 1. | 484 | W20-S20 | | | | | R |
| A66. 1. | 630 | W20-S20 | | | | | R |
| A66. 1. | 3242 | W25-S00 | | | | | R |
| A66. 1. | 616 | W35-S15 | | | | | R |
| A66. 1. | 1802 | W35-S20 | | | | | R |
| A66. 1. | 1774 | W40-S05 | | | | | 59 |
| A66. 1. | 3175 | W40-S05 | | 5 zone | | | 20 |
| A66. 1. | 3821 | W40-S05 | 48 | | | | 8 |
| A66. 1. | 2364 | W40-S10 | | | | | 17 |
| A66. 1. | 3355 | W40-S10 | | | | | 93 |
| A66. 1. | 3638 | W40-S10 | | | | | 12 |

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 6665 | W40-S10 | | | | | 19 |
| A66. 1. | 6666 | W40-S10 | | | | | 21 |
| A66. 1. | 3964 | W40-S10 | | | | | R |
| A66. 1. | 4993 | W40-S10 | | | | | R |
| A66. 1. | 2036 | W40-S15 | 35 | | | | 9 |
| A66. 1. | 2391 | W40-S15 | 63-70 | 7 level | | | 25 |
| A66. 1. | 2436 | W40-S15 | 48-60 | 6c level | | | 54 |
| A66. 1. | 2445 | W40-S15 | 59-63 | 7 level | | | 87 |
| A66. 1. | 2578 | W40-S15 | | 6a level | | | 100 |
| A66. 1. | 2875 | W40-S15 | 35 | | | | 79 |
| A66. 1. | 5370 | W40-S15 | 34-42 | 4a level | | | 13 |
| A66. 1. | 6403 | W40-S15 | 25-36 | 2 zone | | | 15 |
| A66. 1. | 6930 | W40-S15 | 48-60 | 6a level | | | 76 |

Table 1

Table 1

| Catalogue Number | Field Number | Provenience | | | | | Gram[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 1440 | W00-S05 | | | | | R |
| A66. 1. | 1446 | W00-S05 | | | | | R |
| A66. 1. | 1474 | W00-S05 | | | | | R |
| A66. 1. | 3608 | W00-S10 | 55-65 | 6a level | C level | 3 level | 27 |
| A66. 1. | 4431 | W00-S10 | 134-138 | $k_1$ level | 12 level | 9 level | 64 |
| A66. 1. | 6490 | W00-S10 | 42-44 | b level | B level | 2 level | 17 |
| A66. 1. | 6574 | W00-S10 | 39-42 | 1 level | A level | 1 level | 16 |
| A66. 1. | 6681 | W00-S10 | 46-50 | | B level | 2 level | 28 |
| A66. 1. | 6699 | W00-S10 | 42-45 | 2c level | B level | 2 level | 38 |
| A66. 1. | 4185 | W00-S10 | | | | | R |
| A66. 1. | 6668 | W00-S10 | | | | | R |
| A66. 1. | 2401 | W00-S15 | 53-63 | 6 level | E level | 3 level | 14 |
| A66. 1. | 6670 | W00-S15 | 78-84 | $e_3$ level | F level | 4 level | 24 |

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 6931 | W40-S15 | 48-60 | 6a level | | | 100 |
| A66. 1. | 5512 | W40-S15 | | | | | R |
| A66. 1. | 3855 | W45-S05 | | | | | R |
| A66. 1. | 2578 | W45-S15 | | 6a level | | | 91 |
| A66. 1. | 5536 | W45-S15 | | | | | 13 |
| A66. 1. | 5986 | W45-S15 | | 10 level | | | 28 |
| A66. 1. | 1452 | W05-N05 | | | | | R |
| A66. 1. | 1468 | W05-N05 | | | | | R |
| A66. 1. | 4836a | Surface | | | | | 12 |
| A66. 1. | 1455 | W00-S05 | 88-91 | 9 level | E level | 6 level | 8 |
| A66. 1. | 1475 | W00-S05 | 39-45 | 3 level | B level | 2 level | 18 |
| A66. 1. | 1491 | W00-S05 | 39-45 | 3 level | B level | 2 level | 8 |
| A66. 1. | 1501 | W00-S05 | 58 | 10 level | 1 level | 2 level | 13 |

Table 1

Table 1

| Catalogue Number | Field Number | Provenience: pit | Provenience: b.d. inches | Provenience: pit[2] strat. | Provenience: master[3] profile | Provenience: profile[4] key | Grams[1] |
|---|---|---|---|---|---|---|---|
| A66. 1. | 6700 | W00-S15 | 62-67 | $6_1$ level | E level | 3 level | 28 |
| A66. 1. | 6669 | W00-S15 | | | | | R |
| A66. 1. | 6489 | W00-S20 | 44-52 | 2 level | | | 26 |
| A66. 1. | 6492 | W00-S20 | | | | | 21 |
| A66. 1. | 5682 | W00-S20 | | | | | R |
| A66. 1. | 6486 | E05-S00 | 45-51 | 3 level | B level | 2 level | 36 |
| A66. 1. | 6616 | E05-S00 | | | | | R |
| A66. 1. | 6573 | E05-S05 | 53-69 | 7a level | B, 1, C level | | 15 |
| A66. 1. | 6576 | E05-S05 | | 2 level | | | 9 |
| A66. 1. | 549 | E05-S10 | 66-88 | | E, 2 level | 4 level | 42 |
| A66. 1. | 6480 | E05-S10 | 41 | | B level | 2 level | 33 |
| A66. 1. | 6572 | E05-S10 | 41 | | B level | 2 level | 18 |
| A66. 1. | 6667 | E05-S10 | 56 | | C level | 3 level | 42 |

| Catalogue Number | Field Number | Provenience: pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | Grams[1] |
|---|---|---|---|---|---|---|---|
| A66. 1. | 6680 | E05-S10 | 66 | | E level | 5 level | 42 |
| A66. 1. | 6575 | E05-S10 | | | | | R |
| A66. 1. | 6487 | E05-S10 | | | | | R |
| A66. 1. | 6488 | E05-S15 | 34-46 | 2 level | A, B, 2 level | 1, 2 level | 25 |
| A66. 1. | 6591 | E05-S15 | | | | | 18 |
| A66. 1. | 6585 | E05-S15 | | | | | R |
| A66. 1. | 6589 | E05-S15 | | | | | R |
| A66. 1. | 447 | E10-S10 | 53-56 | | E level | 5 level | 8 |
| A66. 1. | 595 | E10-S10 | 65-69 | 7a level | E level | 5 level | 15 |
| A66. 1. | 431 | E10-S10 | | | | | R |
| A66. 1. | 500 | E10-S10 | | | | | R |
| A66. 1. | 5067 | E15-S00 | | | | | 33 |
| A66. 1. | 6584 | E15-S05 | 65 | 9 level | B level | 2 level | 41 |

Table 1

Table 1

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 5997 | E20-S00 | | | | | 39 |
| A66. 1. | 5998 | E20-S00 | 72 | h level | | | 63 |
| A66. 1. | 6105 | E20-S00 | 54 | a level | | | 100 |
| A66. 1. | 6129 | E20-S00 | 72 | h level | | | 8 |
| A66. 1. | 6509 | E20-S00 | 72 | h level | | | 66 |
| A66. 1. | 6511 | E20-S00 | 72 | h level | | | 93 |
| A66. 1. | 6933 | E15-S10 | 66 | 1 level | D level | 3 level | 42 |
| A66. 1. | 6469 | E20-S05 | 70-85 | | C, B level | 2, 4 level | 34 |
| A66. 1. | 6596 | E20-S10 | | 6b level | | | 16 |
| A66. 1. | 6318 | E25-S05 | 66 | f level | B level | 2 level | 32 |
| A66. 1. | 6458 | E25-S05 | 74 | f level | B level | 2 level | 83 |
| A66. 1. | 6660 | E25-S05 | | | | | 27 |
| A66. 1. | 6698 | E25-S05 | 79 | fc level | B level | 2 level | 53 |

| Catalogue Number | Field Number | Provenience | | | | | Grams[1] |
|---|---|---|---|---|---|---|---|
| | | pit | b.d. inches | pit[2] strat. | master[3] profile | profile[4] key | |
| A66. 1. | 6303 | E25-S15 | 37 | $a_9$ level | | | 14 |
| A66. 1. | 6367 | E25-S15 | 37 | $a_9$ level | | | 12 |
| A66. 1. | 6906 | E25-S15 | 79 | | | | 20 |
| A66. 1. | 6907 | E25-S15 | 79 | | | | 65 |
| A66. 1. | 6238 | E50-S20 | | | | | 37 |

* The data presented in this table is incomplete, but it gives the reader a general picture of sample size and location. It also illustrates the present lack of stratigraphic data for some of the samples.

1 Rounded off to the nearest gram

2 Information collected from field note profiles

3 From master profiles on page

4 From profile key on page

5 Rejected because sample was under 8 grams

Table 1

Appendix I

# DATA CARD FORMAT

On the first side of the data card important information collected in the repackaging process was recorded.

Side One of Data Card

---

Catalogue number

Field number

Grams
  (rounded off to the nearest gram)

Texture
  (either chunks and/or coarse and/or fine)

Sample contamination
  (specific sources)

Sample appearance
  (general observation based on inspection under magnifying lens)

---

Information relating to the location of the sample in the site was recorded on the opposite side of the data card. The sample collector was also indicated.

Side Two of Data Card

---

Collector

Depth
  b.d. inches
  pit stratigraphic level

Master profile
  south level
  east or west level

Cultural materials in association
  hearth
  artifacts
  living floor

---

The information recorded on the data cards allowed the ensuing detailed analysis of the charcoal samples without further reference to the samples after the repackaging process.

Appendix II

# LIST OF DATED SAMPLES

by

Joseph W. Michels

## REPORT ON RADIOCARBON DATED SAMPLES

Seven charcoal samples were submitted to the University of Michigan Carbon-14 laboratory for dating. Results were released by Crand and Griffin while this manuscript was in press. As a result, the authors of this preliminary report have not had the benefit of these dates, nor have the dates themselves been thoroughly analyzed or interpreted. Specific information on each sample can be obtained from the body of this chapter by referring to the Sheep Rock Catalogue Number listed below.

| Michigan Lab. No. | Sheep Rock Catalogue No. | Master Level Provenience | Date |
|---|---|---|---|
| M-1903 | A66.1.6699 | Level 2 | A.D. 1690±100 |
| Comment: | Date probably closer to earlier part of the S.D. range (1590-1640), and it probably dates the Susquehannock occupation. | | |
| M-1905 | A66.1.6458 | Level 2 | A.D. 1600±100 |
| Comment: | Date probably closer to earlier part of the S.D. range (1500-1600), and it may possibly date Shenk's Ferry or Susquehannock occupation. | | |
| M-1904 | A66.1.2967 | Level 3 | A.D. 1460±100 |
| Comment: | Date can probably be attributed to Owasco or Shenk's Ferry occupation. | | |
| M-1906 | A66.1.6568 | Level 5 | B.C. 2350±180 |
| Comment: | Definitely dates the Late Archaic component. | | |
| M-1907 | A66.1.6588 | Level 6 | B.C. 1850±180 |
| Comment: | Date is anomolous in terms of its stratigraphic provenience. Further analysis of the specific stratigraphic setting of this sample is scheduled for this summer. | | |
| M-1908 | A66.1.4431 | Level 9 | B.C. 5100±250 |
| Comment: | This is probably a terminal Early Archaic date, based on its stratigraphic relation to diagnostic Early Archaic artifacts. | | |
| M-1909 | A66.1.6438 | Level 10 | B.C. 6920±320 |
| Comment: | The sample has a feature association, and underlies Kirk Corner-Notched points. It is in stratigraphic association with a bifacially-ground celt fragment. | | |

# PHOTOGRAPHIC RECORD OF SHEEP ROCK:

# A SUMMARY AND ANALYSIS

by

Isabelle S. Fries

## ABSTRACT

This chapter provides a permanent record of all photographs and slides taken of Sheep Rock and several other sites surveyed along the Raystown Branch of the Juniata River. This record, which indicates aerial and scenic photographs, photographs of archaeological features and their excavation procedures, as well as of stratigraphy, artifacts, line drawing and maps, will be useful for future analyses and publications concerning Sheep Rock and surrounding sites.

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# LIST OF TABLES

# INTRODUCTION

This photographic account of Sheep Rock and related sites provides a record of events for reference in current and future investigations of the subject. This record of the excavation at Sheep Rock includes all facets of excavation and study of artifacts with black and white negatives and color slides. All black and white negatives were taken with a Calumet 4-by-5 view camera using Panatomic X film, while all color slides were taken with a Pentax 35-mm Single Lens Reflex camera using Kodacrome II film. There were also some black and white negatives developed as slides, as well as prints and color slides from previous seasons at Sheep Rock, which will be included in the discussion.

# ORGANIZATION OF THE FILE

The photographs of the site are organized in several ways. First, all photographs were listed in a notebook, stating the number of the negative, the date taken, the "f stop" of the lens, the shutter speed, and finally a description of the subject photographed, including the layout of the photograph. For instance, in the case of a picture of several pieces of pottery, it is worthwhile to know that Type A is in the top, right-hand corner, etc. The 4-by-5 negatives were then filed according to number with contact prints of each attached to the negative cover. The original records of the 35-mm slides, the same as the file described above, were used to organize a second record. First, the slides were organized according to subject, with this indicated on each slide. After this, they were organized according to the date and numbers of development printed on each slide. Then all these factors were integrated into a final numbered file starting with the earliest date and number, providing a description of the slide and stating the subject (which had been previously noted). Therefore, one can sort according to date, number, description, or subject.

Similar shots were taken with both cameras, so the discussion of the 35-mm slides will approximate that of the 4-by-5 negatives.

# CATEGORIES OF PHOTOGRAPHS

Most of the photographs of the 1966 season at Sheep Rock were taken with the 4-by-5 view camera (this had not been used previously). Every basic type of photograph usually associated with an archaeological excavation was included in the catalogue. The total number of 4-by-5 negatives is 280. Table 1 presents the categories of photos with their various percentages.

Panoramic shots of the site and the surrounding area compose about 7 per cent of the total 4-by-5 catalogue. Aerial and scenic photography aid in the archaeological survey of an area by identifying other possible sites for future excavation. Photographs of the surrounding scenery also provide information for the ecological survey and study of an area or site. Eight per cent of the negatives are of survey sites which assist in such investigations.

Archaeological features consist of 17 per cent of the negatives. Since archaeology is a destructive science (that is, in order to learn about a site an archaeologist must first dissect it and analyze the parts), photographs of the exact conditions under which features were found are a necessity. If an incompetent field worker fails to describe or sketch correctly his findings, a photograph can correct this mistake and preserve the find for future analysis. Even if the worker is competent, he may be erroneous in the description or drawing of a feature, which the camera will pick up. Stratigraphy of the side-wall profiles is also included in this section, since it in itself is a feature and an accurate record of it must be provided for the study and analysis of the geologic and cultural evolution of any site.

In the material associated with a site, whether it is artifactual, observational, or photographical, a record of the field workers is needed. About 9.6 per cent of the photos consist of students excavating or at other tasks. The purpose of this record is to demonstrate field techniques which are not inherent in the photographs of the layout of the site, the phases of excavation, and features. For example, series of photographs of the technique used in excavating a burial with a shot of each step proved to be very worthwhile in further study of the burial and its excavation. These photographs show the techniques used and their applications.

The last series of pictures in the 4-by-5 catalogue concerns artifacts from Sheep Rock. These photographs, which constitute 52.4 per cent of the total negatives, are useful in several ways. If an artifact is misplaced, its meaning is not lost to posterity since it may still be studied through its photographs. Filing of artifacts according to their cultural types may be aided by the use of photographs. They are also invaluable for the illustration of typologies of artifactual materials. Pictures of maps and line drawings, which constitute 6 per cent of the negatives, are often needed for publication.

As was mentioned in the introduction, color slides were also included in the photographic file of Sheep Rock. The 310 color slides include the same types of shots as the 4-by-5 negatives, but with the added dimension of color, which is often helpful in the analysis of the objects photographed. Most of the slides were of

Table 1

PERCENTAGES OF VARIOUS TYPES OF PHOTOGRAPHS

Four-by-Five Negatives

| Category | Percentage |
|---|---|
| Artifacts | 52.4 |
| Excavation Procedures | 9.6 |
| Features | 17.0 |
| Maps and line drawings | 6.0 |
| Panoramic shots | 7.0 |
| Survey sites | 8.0 |

Color Slides

| Category | Percentage |
|---|---|
| Artifacts | 44.0 |
| Excavation Procedures | 9.0 |
| Features | 9.0 |
| Panoramic shots | 2.0 |
| Students | 6.0 |
| Survey sites | 30.0 |

survey sites and artifacts, 30 per cent and 44 per cent, respectively, while 9 per cent are features, 9 per cent excavation, 6 per cent students, and 2 per cent panoramic shots.

In the archaeological features a color characteristic may be emphasized. The stratigraphy of a side wall is presented as a permanent record in a photograph instead of the fallible and often confusing verbal description of the color and hues involved. Again color is important in photographs of artifacts to highlight a possibly distinguishing characteristic of an artifact; this is especially important when one is dealing with pottery.

Appendix I

# FOUR-BY-FIVE CATALOGUE

1. 36-Hu-1: Feature 1 in E10-S20, a supposed fire pit, later learned to be rotted bark, is shown in association with a rock complex against the side-wall.

2. 36-Hu-1: Feature 1 in E10-S20, same as above.

3. 36-Hu-1: Feature 3 in W10-S10, a fire pit or ash lens in association with a rock complex.

4. 36-Hu-1: East wall profile of E15-S20.

5. 36-Hu-1: A positive of a view of the rock overhang and surrounding trees.

6. 36-Hu-1: Feature 1 in E20-S0, a fire pit shown with reference to a large rock complex taking up about one-third of the pit. The photograph was taken in such a manner to show the side view of the west profile.

7. 36-Hu-1: Feature 1 in E20-S0, same as above.

8. 36-Hu-1: Feature 1 in E20-S0, same as above.

9. 36-Hu-1: Feature 1 in E20-S0, showing south profile in side view.

10. 36-Hu-1: Feature 1 in E20-S0, same as above.

11. 36-Hu-1: Feature 2 in E20-S0, charcoal pit near E20-S0 corner in foreground of photo.

12. 36-Hu-1: Feature 2 in E20-S0, same as above.

13. 36-Hu-1: Feature 4 in E20-S0, charcoal pit showing south profile of pit.

14. 36-Hu-1: Feature 4 in E20-S0, same as above.

15. 36-Hu-9: Survey site, panoramic shot of scenery and excavated squares.

16. 36-Hu-9: Survey site, S20-W60 excavated to about 6 inches below the surface.

17. 36-Hu-9: Survey site, S10-W30 excavated to about 6 inches below the surface.

18. 36-Hu-1: Feature 5 in E20-S0, charcoal pit in level H lying against the north wall in the E20-N5 corner.

19. 36-Hu-1: Feature 5 in E20-S0, same as above.

20. 36-Hu-1: Feature 5 in E20-S0, same as above.

21. 36-Hu-1: Panoramic shot of Sheep Rock taken from the middle of the river looking N.E., showing the site in respect to the river level, the surrounding scenery, and the rock cliff and overhang.

22. 36-Hu-1: Same as above.

23. 36-Hu-1: Same as above, but taken from the island across the river from the site.

24. 36-Hu-1: Same as above.

25. 36-Hu-1: Same as above.

26. 36-Hu-1: Same as above.

27. 36-Hu-1: Same as above.

28. 36-Hu-1: Same as above.

29. 36-Hu-9: Feature 1 in S20-W60, hard to distinguish charcoal concentration.

30. 36-Hu-9: Feature 2 in S20-W60, possible post holes against a side-wall.

31. 36-Hu-9: Survey site, Feature 3 in S20-W60, hard to distinguish, possible post hole.

32. 36-Hu-9: Survey site, bridge guard rail on the way to survey site.

33. 36-Hu-1: Feature 7 in E20-S10, possible charocal lens in reference to rock complex in level C.

34. 36-Bd-36: Survey site, photo of pit B-7, showine entire ten-foot by ten foot pit, with possible fire pit, post holes, and a circular soil discoloration.

35. 36-Bd-36: Survey site, Feature 1, in pit B-7, hard to distinguish charcoal pit.

36. 36-Bd-36: Survey site, Feature 1 in pit B-7, same as above.

37. 36-Bd-36: Survey site, Feature 1, showing entire pit with feature in lower left-hand corner.

38. 36-Bd-36: Survey site, same as above.

39. 36-Bd-36: Survey site, photo of northern portion of the site with students working around squares B-5 and B-7.

40. 36-Bd-36: Survey site, photo of western portion of the site with students working around squares B-5 and B-7.

41. 36-Bd-36: Survey site, photo of students working around squares B-5 and B-7, photo was taken looking toward the river.

42. Blank.

43. Blank.

44. 36-Hu-1: Feature 7 in E25-S5, well distributed ash lens along with two ground stone tools, situated in level D.

45. 36-Hu-1: Feature 7 in E25-S5, same as above.

46. 36-Hu-1: Feature 7 in E25-S5, same as above.

47. 36-Hu-1: Feature 8 in E35-S10, fire pit shown with associated rock complex in level 8.

48. 36-Hu-1: Feature 8 in E35-S10, same as above.

49. 36-Hu-1: Feature 10 in E25-S5, collection of ground stone tools showing west wall in level E.

50. 36-Hu-1: Feature 10 in E25-S5, same as above.

51. 36-Hu-1: Feature 9 in W45-S10, photo of refuse pit looking towards cliff in level A-7.

52. 36-Hu-1: Feature 9 in W45-S10, refuse pit with possible bark basket exposed in the lower right hand corner, level A-7.

53. 36-Hu-1: Feature 9 in W45-S10, same as above.

54. 36-Hu-1: Feature 9 in W45-S10, profile of square, shooting in a westerly direction.

55. 36-Hu-1: Feature 9 in W45-S10, same as above.

56. 36-Hu-1: Level B in W5-S15 (not a feature).

57. 36-Hu-1: Level B in W5-S15 (not a feature, although a possible fire area, but barely distinguishable).

58. 36-Hu-6: Survey site, photo showing both excavated units represented with west portion fully present and east portion partially present.

59. 36-Hu-6: Survey site, photo of the east site of the site with the equipment in position.

60. 36-Hu-6: Survey site, panorama of site showing the layout of squares in reference to rock overhang, looking S.E.

61. 36-Hu-6: Survey site, Sam Casselberry's crew at their leisure.

62. 36-Hu-1: Feature 11 in E25-S5 in level F, fire pit, chipped flint flake, and another worked stone.

63. 36-Hu-1: Feature 11 in E25-S5 in level F, same as above.

64. 36-Hu-1: Feature 11 in E25-S5 in level F, same as above.

65. 36-Hu-1: Feature 11 in E25-S5 in level F, photo of bark circle in Feature 11.

66. 36-Hu-1: Feature 8 in E35-S10 in level 8-1, fire pit, also a cord outlining a ground stone tool.

67. 36-Hu-1: Feature 8 in E35-S10 in level 8-1, same as above.

68. 36-Hu-1: Feature 8 in E35-S10 in level 8-1, same as above.

69. 36-Hu-1: Feature 12 in W45-S10 and 15 in level 12, exposed preserved section of bark basket.

70. 36-Hu-1: Feature 12 in W45-S10 and 15 in level 12, same as above.

71. 36-Hu-1: Panoramic view of the south side of the site showing the Sheep Rock outcrop, photo was taken from above the shelter.

72. 36-Hu-1: Panoramic view of the site taken facing north, in other words looking into the shelter with its widest view (shot taken from rise above the Mussel Rock survey site).

73. 36-Hu-1: Panoramic view, same as above.

74. Blank.

75. 36-Hu-1: Panoramic view, same as # 73.

76. 36-Hu-1: Square E35-S10, photo of Howard Hobbs brushing the floor of his pit.

77. 36-Hu-1: Photo of east side of the site, photo includes two screens in operation with two field workers per screen.

78. 36-Hu-1: Feature 13 in E50-S20, bone awl, leaf mat, and charcoal lens in level 2.

79. 36-Hu-1: Feature 13 in E50-S20, same as above; electronic flash was used.

80. 36-Hu-1: Panoramic shot, wide angle shot including excavating crew in the dry, northern portion of the site.

81. 36-Hu-1: Panoramic shot of site looking toward the dry, northern section of the site, taken near spring, shows supply shed and crews excavating.

82. 36-Hu-1: Panoramic shot, photo of the horseshoe bend in the Raystown River as it appears from the overhang over the rock shelter.

83. 36-Hu-1: Panoramic shot of river taken from above the site, same basics as #82, except it is the western part of the river as viewed from the cliff and photo #82 is the eastern view.

84. 36-Hu-1: Panoramic, same as photo #83.

85. 36-Hu-1: Panoramic, same as photo #82.

86. 36-Hu-1: Panoramic shot of site looking toward dry area of site; Drew Bosee and Donna Conway excavating and Anita, John, and Bill working.

87. 36-Hu-1: Square E35-S10, photo of Howard Hobbs demonstrating findings by brushing away loose dirt for three on lookers.

88. 36-Hu-1: Panoramic shot of the general ecology (flora) in contour (photo shot from cliff above Sheep Rock toward Filson's Anchorage).

89. 36-Hu-1: Panoramic shot, same as above on the contour continuation. Artifact shots of student projects.

90. Projectile points shot against a black background. Test shot.

91. Projectile points shot against a white background. Test shot.

92. Shell artifacts from Corl collection.

93. Shell artifacts from Corl collection.

94. Shell artifacts from Corl collection.

95. Shell artifacts from Corl collection.

96. Shell artifacts against dark background.

97. Shell artifacts against a dark background.

98. Cross-sections of potsherds.

99. Cross-sections of potsherds.

100. Cross-sections of potsherds.

101. Grit tempered potsherd and grit conglomerate rock.

102. Potsherds -- yellow background, three lights on top.

103. Potsherds -- yellow background with three lights on top, but no backlights.

104. Potsherds -- grey background with three lights on top, but no backlight.

105. Potsherds -- grey background with three lights on top, but no backlight.

106. Potsherds -- black background with three lights on top, but no backlight.

107. Potsherds -- black background with three lights from top and no backlights.

108. Conglomerate stone (may have been used as temper) and a grit tempered sherd.

109. Same as above.

CORL COLLECTION

110. Early Woodland pottery.

111. Early Woodland pottery.

112. Early Woodland pottery, rimsherds.

113. Antler artifacts, white backgrounds.

114. Antler artifacts, black background.

115. Fishhooks and fish hook blanks, black background.

116. Awls.

117. Middle Woodland pottery.

118. Clemson's Island - like pottery.

119. Untyped pottery.

120. Cord markings on pottery.

121. Owasco - like pottery.

122. Owasco - like pottery.

123. Susquehannock rimsherds.

124. Owasco - like sherds.

125. Potsherds.

126. Ground stone tools.

127. Corn cobs.

128. Human bones.

129. Vegetable matter.

130. Incised Susquehannock pottery.

131. Projectile points.

132. Projectile points, black background.

133. Projectile points, black background.

134. Same as above but grey background.

135. Same as above.

136. Projectile points same group as above but instead of using three lights, two were used.

137. Projectile points, new group with grey background and two lights.

138. Same as above but with three lights on a grey background.

139. Shell artifacts shot against a black background with three photofloods.

140. Wood artifacts, three pieces of worked wood; possible arrow shafts.

141. 36-Hu-1: Mike Steffy setting up transit in dry area at Sheep Rock.

142. 36-Hu-1: Feature 11 in E25-S5; it consisted of a burned bark concentration, post mold, and sharp discolored area.

143. 36-Hu-1: Bark or burned bark circular concentration in Feature 11.

144. 36-Hu-1: Cathy and Cynthia excavating in their pit. Taken with strobe.

145. 36-Hu-1: Mike, Bill W. and Kathy or Cynthia? screening material at Sheep Rock.

146. 36-Hu-1: Don Hardenbergh and Jim Dutt working in pit E25-S5. Shot taken with strobe and self-timer.

147. 36-Hu-1: Bill W., Cynthia, Cathy, Dean of Men at Juniata, and his daughter, Judy, working on pit and watching work proceed.

148. 36-Hu-1: Don and Jim at work in pit E25-S5, using strobe and timer.

149. 36-Hu-1: Mike excavating pit E25-S15. Note artifacts? at his feet. Strobe.

150. 36-Hu-1: Don and Bill W. in front of pit E25-S5. Excavating in process. Strobe.

151. 36-Hu-1: Don and Bill. excavating pit E25-S5. Strobe.

152. 36-Hu-1: Feature 14 in E25-S5, consisted of a bark fire pit, a possible worked deer scapula and a post mold.

153. 36-Hu-1: Feature 14, same as above.

ARTIFACT SHOTS OF STUDENT PROJECTS

154. Flaked stone tools.

155. Flaked stone tools.

156. Whetstone, celts, and mono.

157. Steatite artifacts.

158. Bark board, splinter points, frayed twig, tied bark, and long sticks.

159. Painted shafts, notched shafts, tied sticks, split sticks, decorated stick.

160. Fire hearths, pipe stem, wood awls, and atlatl mainshaft.

161. Knotted bark strips, cut splinters, tied fiber.

162. Fringed bark, grooved bark, woven wood strips.

163. Wood hoop, paddle, wood handle, shredded bark.

164. No negative.

165. Leather with holes and a fringe.

166. Leather with holes and fringe.

167. Leather strips and part of a mocassin.

168. Pipes; bowl fragments.

169. Pipes; angle fragments.

170. Pipes; stem fragments.

171. Large bark basket or bark container. Container viewed from the top.

172. Side view of bark container.

173. Side view of bark container.

174. Knives - this negative as well as the next two have yellow spots and are worthless.

175. Scrapers - yellow spots on negative.

176. Drills, gravers, scraper knife.

177. No negative.

178. Turtle shell artifacts: cup, drilled shell fragments, and fragment with many scratches.

179. Beads and ornaments made of bones.

180. Miscellaneous bone artifacts.

181. Bone awls, or pointed objects of bone.

182. Animal teeth with holes drilled in them, fish hooks and fish hook blanks, knife, and handles.

183. Artifacts made from antler.

184. Pottery type D.

185. Pottery type D.

186. Pottery type D2.

187. Pottery type D2.

188. Pottery type A.

189. Pottery type A.

190. Pottery types C and E fronts.

191. Pottery types C and E fronts.

192. Pottery types C and E backs.

193. Pottery type D backs. Missing.

194. No negative.

195. Pottery type J back; front split negative.

196. Pottery types G, B, J, - interiors and exteriors. Missing.

197. Pottery types - interiors and exteriors. Missing.

198. No negative.

199. No negative.

200. Pottery types C1, C2, H, I - interiors and exteriors of C1 and C2.

201. Pottery types M, D1, C3, K - interiors and exteriors of C3.

202. Pottery types M, D1, C3, K - interiors and exteriors of C3.

203. Pottery types F, D3, L - interiors and exteriors of D3.

204. Pottery types F, D3, L - interiors and exteriors of C3.

205. Series of clay coils and progression of peddled coils and finger smoothed coils.

206. Same as above.

207. Temper types: Top 4 - linestone, thick; bottom three-redshale, thick.

208. Same as above.

209. Temper types: Top 3 - chert; bottom left 2 - quartz; bottom right 2 - shell.

210. Same as above.

211. Type A, Lip I.

212. Cordmarking gradations.

213. Cordmarking gradations.

214. Eight knives.

215. Six drills.

216. Six scrapers.

217. Tubular bone - white background.

218. Tubular bone - white background.

219. Tubular bone - black background.

220. Fish hooks.

221. No negative.

222. No negative.

223. No negative.

224. No negative.

225. No negative.

226. No negative.

227. No negative.

228. Snare and fish net.

228a. Cords tied.

229. Multiple strand cordage.

230. Two-ply cordage.

231. Corn husk bundle.

232. Knots

233. Knots.

234. Braids.

235. Plaiting.

236. Mesh mat.

237. Mesh mat.

238. Coils.

239. Coils.

240. Materials for cords.

241. Materials for cords.

SHOTS OF CORL COLLECTION

242. Selection of twisted fibers, type collection - Corl.

243. Same as above.

244. Selection of short pieces of fiber and knots (corn shocks) - Corl.

245. Same as above.

246. Selection of feathers and animal fur - Corl.

247. Same as above.

248. Selection of feathers and fur - Corl.

249. Selection of animal bone - Corl.

250. Selection of wood - Corl.

251. Same as above.

252. Last day at Juniata College - group scene at side of new science building.

253. Same as above - sober scene.

254. Same as above.

255. Same as above.

256. 36-Hu-1: One of the first days in the 1966 season - clean up; a view toward the east, showing the field workers.

257. 36-Hu-1: same as above.

258. 36-Hu-1: same as above.

259. 36-Hu-1: same as above.

260. 36-Hu-1: same as above.

261. 36-Hu-1: unidentifiable square of dirt.

262. Potsherds displaying rims, some of the catalogue numbers are: A66.1.3166, A66.1.3165, A66.1.3514.

263. Same as #262.

264. Bundled corn husks and shocks.

265. Four notched projectile points.

266. Six triangular projectile points.

267. Five projectile points - very crude or damaged.

268. Five notched projectile points.

269. Eight notched projectile points.

270. Six notched projectile points.

271. Four projectile points.

272. Nine projectile points - presenting a variety of notched bases.

273. Same as above.

274. Six triangular projectile points.

275. Same as above.

276. Soil sample profile, photo of line drawing.

277. Photo of line drawing of Sheep Rock Field Map.

278. Photo of line drawing of the S10 profile.

279. Photo of line drawing of the E10 profile.

280. Photo of line drawing of E5 profile.

Appendix II

# SLIDE CATALOGUE

(All color unless listed otherwise.)

These slides (1-64) were taken in the 1959 season.

1. 36-Hu-1: Panoramic; a view of the site from the river looking NE.

2. 36-Hu-1: Panoramic; a view of the river from the cliff above the site.

3. 36-Hu-1: Talk series; same as above.

4. 36-Hu-1: Panoramic; same as above.

5. 36-Hu-1: Initial excavation; cleaning and screening in process in the dry midden area of the site.

6. 36-Hu-1: Initial excavation; same as above.

7. 36-Hu-1: Feature; Feature 1 in the dry midden area.

8. 36-Hu-1: Feature; field workers at work, displaying a side-wall.

9. 36-Hu-1: Initial excavation; same as above, displaying bark basket in side-wall.

10. 36-Hu-1: Initial excavation; same as above.

11. 36-Hu-1: Initial excavation; general excavation scene, looking north.

12. 36-Hu-1: Initial excavation; same as above.

13. 36-Hu-1: Initial excavation; same as above.

14. 36-Hu-1: Initial excavation; general excavation in trenches.

15. 36-Hu-1: Initial excavation; same as above.

16. 36-Hu-1: Initial excavation; same as above.

17. 36-Hu-1: Initial excavation; general excavation.

18. 36-Hu-1: Initial excavation; same as above.

19. 36-Hu-1: Initial excavation; general excavation with compass.

20. 36-Hu-1: Initial excavation; scene of the trench.

21. 36-Hu-1: Initial excavation; dry midden area of the site, a side-wall.

22. 36-Hu-1: Initial excavation; general work scene, looking north.

23. 36-Hu-1: Talk series; same as above.

24. 36-Hu-1: Initial excavation; general work scene with dust of sifting.

25. 36-Hu-1: Feature; ash, fire pit feature.

26. 36-Hu-1: Feature; Feature 12, fire pit.

27. 36-Hu-1: Discard; field worker (Hally) cleaning profile.

28. 36-Hu-1: Feature; rock fall on bark feature.

29. 36-Hu-1: Artifact; two artifacts displayed in a field workers hand.

30. 36-Hu-1: Initial excavation; field worker cleaning the bark feature and wood and leaves.

31. 36-Hu-1: Initial excavation; wood and leaves feature.

32. 36-Hu-1: Feature; Feature 7, fire pit or place.

33. 36-Hu-1: Initial excavation; overall general scene of workers around screen.

34. 36-Hu-1: Initial excavation; a field worker (Brenda) screening.

35. 36-Hu-1: Feature; midden feature.

36. 36-Hu-1: Initial excavation; a field worker (Barry) holding a snake.

37. 36-Hu-1: Initial excavation; Brenda cleaning bark bed.

38. 36-Hu-1: Initial excavation; field worker (Dave) displaying leaf-filled pit.

39. 36-Hu-1: Initial excavation; general pit scene, with workers around screens and squares.

40. 36-Hu-1: Initial excavation; pit and the beginning of the deeper square.

41. 36-Hu-1: Initial excavation; midden area and rock ledge.

42. 36-Hu-1: Feature; fire hearth with notched points.

43. 36-Hu-1: Initial excavation; deep rock ledge looking NW.

44. 36-Hu-1: Talk series; bark feature cleaned, looking NE.

45. 36-Hu-1: Initial excavation; checkerboard pattern of the excavated squares.

46. 36-Hu-1: Talk series; the same checkerboard pattern with a field worker standing in the middle.

47. 36-Hu-1: Initial excavation; a close up of the previous pattern.

48. 36-Hu-1: Initial excavation; the cross pattern in the excavated squares showing a rock ledge.

49. 36-Hu-1: Initial excavation; same as above.

50. 36-Hu-1: Talk series; the interior of a soapstone sherd.

51. 36-Hu-1: Artifact; the exteriors of two soapstone sherds.

52. 36-Hu-1: Artifact; the interiors of two soapstone sherds.

53. 36-Hu-1: Talk series; Shenks Ferry jaw that might have been boiled.

54. 36-Hu-1: Talk series; view of wooden paddle.

55. 36-Hu-1: Talk series; bark container or basket.

56. 36-Hu-1: Artifact; the reverse side of the bark container.

57. 36-Hu-1: Artifact; seven projectile points.

58. 36-Hu-1: Artifact; arrow nock and a bundle of sticks.

59. 36-Hu-1: Talk series; woven material from Sheep Rock.

60. 36-Hu-1: Artifact; same as above.

61. 36-Hu-1: Talk series; Sheep Rock corded pottery.

62. 36-Hu-1: Artifact; Sheep Rock projectile point sequence.

63. 36-Hu-1: Talk series; same as above.

64. 36-Hu-1: Artifact; cordage.

The following slides (65-149) were taken by Ira Smith in the 1965 season, both at Sheep Rock and other survey sites along the Raystown River. His records were also used to help publish this volume.

65. 36-Hu-1: 1965 excavation; close-up of site destruction and 'potting' in the northern section of the site. Note debris and excavation face.

66. 36-Hu-1: Talk series; looking down on deep pit and wheel barrow at site destruction.

67. 36-Hu-1: Talk series; looking south across the deep pit at Archaic destruction.

68. 36-Hu-1: 1965 excavation; looking at the good condition of the squares, spring seepage and talus slope.

69. 36-Hu-1: 1965 excavation; overall shot of the site showing the different occupation levels, shot south.

70. 36-Hu-1: 1965 excavation; overall shot of site looking north.

71. 36-Hu-1: Talk series; upstream ecology from the site.

72. 36-Hu-1: Talk series; overall shot of site looking toward site from upstream.

73. 36-Hu-1: 1965 excavation; overall shot of the site from downstream, looking NNE.

74. 36-Hu-1: Talk series; a photo of the general ecology, shot from Terrace Mt., shot up river.

75. 36-Hu-1: Feature; Feature in E5-S10, fire pit in level 2a before excavation, taken close-up.

76. 36-Hu-1: Feature; Feature in E5-S10, fire pit in level 2a, taken far away.

77. 36-Hu-1: Feature; Feature in E5-S10, stone lining in fire pit in level 2a.

78. 36-Hu-1: Feature; Feature in E5-S10, Charcoal protruding from profile.

79. 36-Hu-1: Talk series; after excavation of level 7, the skeletal location.

80. 36-Hu-1: Burial; overall view of profile after excavation on level 7 in square E5-S10.

81. 36-Hu-1: Burial; close-up of skeleton in E5-S10 showing the scapula and the ribs.

82. 36-Hu-1: Burial; close-up of skeleton in E5-S10 showing the cervical vertebra looking west.

83. 36-Hu-1: Discard; site during clean-up showing the deep pit and the wheel barrow trench.

84. 36-Hu-1: 1965 excavation; site clean-up showing the woodland levels looking south.

85. 36-Hu-1: 1965 excavation; site clean-up showing the wheel-barrow trench and the make shift rain sifter.

86. 36-Hu-1: Discard; southern view of excavated E5-S10 with skeletal column.

87. 36-Hu-1: Feature; Feature in E10-S10, level 1a fire pit, level 2 and 3.

88. 36-Hu-1: Discard; Partial excavation of fire pit in E10-S10.

89. 36-Hu-1: Talk series; unexcavated level 4 in E10-S10.

90. 36-Hu-1: Burial; unexcavated level 5 in E10-S10.

91. 36-Hu-1: Burial; burial in E10-S10, showing close-up of newly exposed ribs under removed ribs; black and white slide.

92. 36-Hu-1: Talk series; burial in E10-S10, showing same as above; black and white.

93. 36-Hu-1: Talk series; burial in E10-S10, showing close-up of cervical vertibra; black and white.

94. 36-Hu-1: Burial; burial in E10-S10 showing same as above (#93); black and white.

95. 36-Hu-1: Burial; burial in E10-S10 showing overall skeletal layout of the pelvis, foot, and cervical vertibra; black and white.

96. 36-Hu-1: Burial; burial in E10-S10 showing same as above; black and white.

97. 36-Hu-1: Burial; burial in E10-S10 showing a close-up of cleared pelvic area; black and white.

98. 36-Hu-1: Burial; burial in E10-S10 showing an overall close-up; black and white.

99. 36-Hu-1: Burial; burial in E10-S10 showing close-up of two crossed feet; black and white.

100. 36-Hu-1: Burial; burial in E10-S10 showing close-up of the underlying foot after the removal of the overlying foot; black and white.

101. 36-Hu-1: Talk series; close-up of the underlying foot; black and white.

102. 36-Hu-1: Burial; burial in E10-S10 close-up of the pelvis and tail bone before removal; black and white.

103. 36-Hu-1: Burial; burial in E10-S10 close-up of pelvis and tail bone; black and white.

104. 36-Hu-1: Burial; burial in E10-S10 close-up of left hand; black and white.

105. 36-Hu-1: Burial; burial in E10-S10 showing the relationship between the two exposed hands; black and white.

106. 36-Hu-1: Burial; burial in E10-S10 showing the close-up of the right hand; black and white.

107. 36-Hu-1: Burial; burial in E10-S10 showing the close-up of the two hand relationships; black and white.

108. 36-Hu-1: Burial; overall photo of the burial in E10-S10.

109. 36-Hu-1: Burial; skeleton excavation in E5-S10.

110. 36-Hu-6: Discard; rock shelter before testing.

111. 36-Hu-6: Survey excavation; test trench showing the removal of the first level to the charcoal-shell level.

112. 36-Hu-6: Survey excavation; close-up of the above shot.

113. 36-Hu-18: Artifacts; projectile points from the collection of H. Gordon Stauffer of the site 36-Hu-18 and the surrounding area.

114. 36-Hu-18: Artifacts; two projectile points from the H. Gordon Stauffer collection.

115. 36-Hu-6: Survey excavation; test excavation looking north.

116. 36-Hu-6: Discard; test excavation looking SSE.

117. 36-Hu-25 and 26: Artifacts; three celts from the Avery R. Baker collection.

118. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

119. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

120. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

121. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

122. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

123. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

124. 36-Hu-25 and 26: Artifacts; projectile points from the Avery R. Baker collection.

125. 36-Hu-12: Artifacts; projectile points from the William Watkins collection.

126. 36-Hu-12: Artifacts; projectile points from the William Watkins collection.

127. 36-Hu-8: Artifacts; projectile points from the William Watkins collection.

128. 36-Hu-8: Artifacts; same as above.

129. 36-Hu-17: Artifacts; a variety of celts and projectile points from the William Watkins collection.

130. 36-Hu-17: Artifacts; a projectile point from the William Watkins collection.

131. 36-Hu-17: Artifacts; two ground stone tools, from the collection of William Watkins.

132. 36-Hu-17: Artifacts; a variety of projectile points from the William Watkins collection.

133. 36-Hu-18: Artifacts; projectile points from the William Watkins collection.

134. 36-Hu-25 and 26: Artifacts; a projectile point from the William Watkins collection.

135. 36-Hu-25 and 26: Artifacts; a ground stone tool from the William Watkins collection.

136. 36-Hu-25 and 26: Artifacts; flaked tools from the William Watkins collection.

137. 36-Hu-25 and 26: Artifacts; two pieces of stone with a drilled hole in each, probably for decoration from the William Watkins collection.

138. 36-Hu-25 and 26: Artifacts; projectile points from the William Watkins collection.

139. 36-Hu-25 and 26: Artifacts; a variety of stone tools, including projectile points, ground stone tools and flaked tools from the William Watkins collection.

140. 36-Hu-12: Artifacts; projectile points from the William Watkins collection.

141. 36-Hu-25 and 26: Artifacts; same as #139.

142. 36-Hu-30: Projectile points; ground stone tools and blanks from the Glenn Hess collection.

143. View of survey sites; unidentified view of unidentified site, the slide includes a view of a rock cliff and the surrounding trees.

144. View of survey sites; unidentified view of unidentified site, slide includes a view of a stone wall.

145. 36-Hu-3: View of survey sites; panoramic view taken from the road along the site.

146. 36-Hu-4: View of survey sites, panoramic view of site; located on a hillside under a small rock ledge.

147. 36-Hu-1: Talk series; burial in E20-S10, slide showing the late Archaic adult extended burial.

148. 36-Hu-1: 1965 excavation; site clean-up showing excavation of square E10-S10.

149. 36-Hu-1: 1965 excavation; site clean-up showing the deep pit.

The following slides were taken in the 1966 season at Sheep Rock and other survey sites.

150. 36-Hu-9: Survey excavation; an east to west shot of the grid layout..

151. 36-Hu-9: Field work; the field workers working over a screen.

152. 36-Hu-9: Discard; field worker excavating near a screen.

153. 36-Hu-9: Discard; view of site looking through a screen.

154. 36-Hu-9: Survey site; view of survey site, Workhouse site.

155. 36-Hu-9: Survey site; view of survey site, Workhouse site.

156. 36-Hu-9: Survey site; view of site, Workhouse site.

157. 36-Hu-9: Survey site; view of site, Workhouse site.

158. 36-Hu-9: Survey site; view of site, Workhouse site.

159. 36-Hu-9: Survey site; panoramic view of the Workhouse site and the surrounding area.

160. 36-Hu-9: Survey site; panoramic view of the Workhouse site and the surrounding area.

161. 36-Hu-9: Survey site; panoramic shot of the Workhouse site.

162. 36-Hu-9: Field work; two field workers excavating in a square of the survey site.

163. 36-Hu-9: Field work; entire view of the survey site with two field workers excavating in one of the squares.

164. 36-Hu-9: Discard; view of the site showing the excavated squares and a screen and wheelbarrow.

165. 36-Hu-9: Discard; same view as above but taken at a farther distance away.

166. 36-Hu-9: Discard; wide-angle shot of the site taken from lower ground since only the screens and not the excavated squares can be seen.

167. 36-Hu-9: Field work excavation; an excavated square S20-W20 with a live turtle in the square.

168. 36-Hu-9: Discard; panoramic shot of the Workhouse site and the surrounding area.

169. 36-Hu-1: Discard; panoramic view of Sheep Rock taken from the river looking toward the site, looking NE.

170. 36-Hu-1: Discard; panoramic view of Sheep Rock taken from the river looking E toward the site.

171. 36-Hu-1: Artifacts; potsherds from Sheep Rock.

172. 36-Hu-1: Discard; same as above.

173. 36-Hu-1: Discard; same as above.

174. 36-Hu-1: Artifacts; potsherds.

175. 36-Hu-1: Artifacts; same as above.

176. 36-Hu-1: Discard; same as above.

177. 36-Hu-1: Artifact; five potsherds on a blue background.

178. 36-Hu-1: Artifact; same as above.

179. 36-Hu-1: Talk series; seven potsherds on a clear background.

180. 36-Hu-1: Discard; same as above.

181. 36-Hu-1: Artifacts; potsherds.

182. 36-Hu-1: Discard; same as above.

183. 36-Hu-1: Discard; same as above.

184. 36-Hu-1: A collection of potsherd rims, discard.

185. 36-Hu-1: Talk series; same as above.

186. 36-Hu-1: Artifact; potsherds.

187. 36-Hu-1: Discard; same as above.

188. 36-Hu-1: Discard; projectile points.

189. 36-Hu-1: Discard; projectile points.

190. 36-Hu-1: Artifacts; seven projectile points.

191. 36-Hu-1: Discard; same as above.

192. 36-Hu-1: Discard; same as above.

193. 36-Hu-1: Discard; knives.

194. 36-Hu-1: Talk series; same as above.

195. 36-Hu-1: Talk series; ground stone tools.

196. 36-Hu-1: Discard; same as above.

197. 36-Hu-1: Discard; same as above.

198. 36-Hu-1: Discard; ground stone tools.

199. 36-Hu-1: Talk series; same as above.

200. 36-Hu-1: Discard; a variety of dry materials including a corn cob, seed pods, and seeds.

201. 36-Hu-1: Ecological specimens; same as above.

202. 36-Hu-1: Discard; same as above.

203. 36-Hu-1: Discard; potsherds.

204. 36-Hu-1: Artifacts; same as above.

205. 36-Hu-1: Discard; same as above.

206. 36-Hu-1: Talk series; view of the side of the new science building at Juniata College showing the bus, which transported us to the site. The science building is where the field school lab was located.

207. 36-Hu-1: Discard; slide of Filson's landing where the students from the field school were transported to the site by boat; slide was taken in the morning with the mist still on the river.

208. 36-Hu-1: Discard; same as above.

209. 36-Hu-1: Discard; damaged slide of excavation.

210. 36-Hu-1: Field work; students working over screen.

211. 36-Hu-1: Field work; two students excavating while sitting in their square.

212. 36-Hu-1: Talk series; student working in his square.

213. 36-Hu-1: Talk series; students working over screen showing contents of screen.

214. 36-Hu-1: Talk series; slide showing excavated square and the stratigraphy of the side wall.

215. 36-Hu-1: Talk series; field workers excavating in their square.

216. 36-Hu-1: Talk series; field worker, Donna Conway, excavating on a bark lined pit.

217. 36-Hu-1: Discard; a slide of ecological specimens.

218. 36-Hu-1: Talk series; same as above.

219. 36-Hu-1: Ecological specimens; leaves and bark.

220. 36-Hu-1: Talk series; same as above.

221. 36-Hu-1: Feature; the slide is labeled "Exposure Series Six" but otherwise unidentified.

222. 36-Hu-1: Talk series; Feature 13 in E50-S20, a fire area.

223. 36-Hu-1: Talk series; the removal of the charcoal in Feature 13 in E50-S20.

224. 36-Hu-1: Talk series; two field workers removing the charcoal, as above.

225. 36-Hu-1: Talk series; same subject as above but different layout.

226. 36-Hu-1: Talk series; photo of site showing workers at screen, with dust flying, taken looking north.

227. 36-Hu-1: Artifact; a selection of bone awls.

228. 36-Hu-1: Talk series; same as above.

229. 36-Hu-1: Artifact; a selection of modified shells.

253. 36-Hu-1: Discard; same as above.

254. 36-Hu-1: Discard; same basics as above.

255. 36-Hu-1: Discard; same basics as above.

256. 36-Hu-1: Discard; same basics as above.

257. 36-Hu-1: Recreation; same basics as above.

258. 36-Hu-1: Talk series; same basics as above.

259. 36-Hu-1: Discard; a selection of potsherds.

260. 36-Hu-1: Artifacts; same as #259.

261. 36-Hu-1: Discard; same as above.

262. 36-Hu-1: Discard; a selection of potsherds demonstrating the different markings on the pottery.

263. 36-Hu-1: Discard; same as above.

264. 36-Hu-1: Artifacts; same as above.

265. 36-Hu-1: Discard; a selection of potsherds on a blue background.

266. 36-Hu-1: Artifacts; same as above.

267. 36-Hu-1: Discard; same as above.

268. 36-Hu-1: Talk series; reconstructed potsherd.

269. 36-Hu-1: Artifacts; same as above.

270. 36-Hu-1: Discard; same as above, except on a clear background and not a blue one.

271. 36-Hu-1: Discard; same as above.

272. 36-Hu-1: Discard; same as above.

273. 36-Hu-1: Talk series; three pieces of reconstructed potsherds.

274. 36-Hu-1: Discard; same as above.

275. 36-Hu-1: Artifacts; two pieces of modified wood.

276. 36-Hu-1: Artifacts; same as #274.

277. 36-Hu-1: Artifacts; bark with holes and tied bark.

278. 36-Hu-1: Artifacts; pointed sticks.

279. 36-Hu-1: Talk series; pointed sticks.

280. 36-Hu-1: Feature, unidentified feature but author thinks it might be in square E20-S0.

281. 36-Hu-1: Feature; same feature as above but taken at a different angle.

282. 36-Hu-6: Discard; horse-play among the field workers at survey site.

283. 36-Hu-6: Survey excavation; field workers excavating in their squares.

284. 36-Hu-6: Survey excavation; photo of survey site showing excavated squares and the location of the screen.

285. 36-Hu-6: Survey excavation; same as above but taken from the opposite direction.

The following slides are copies of those taken by D. Michael Steffy during the 1966 summer season at Sheep Rock.

286. 36-Hu-1: Artifacts; a reconstructed piece of pottery.

287. 36-Hu-1: Artifacts; bone tools of all types found at Sheep Rock.

288. 36-Hu-1: Artifacts; pipes, bowls and stems.

289. 36-Hu-1: Artifacts; projectile points shown on their artifact cards.

290. 36-Hu-1: Artifacts; pieces of leather.

291. 36-Hu-1: Lab work; the process of cleaning artifacts in the laboratory.

292. 36-Hu-1: Lab work; the process of sorting the cleaned artifacts so that cataloging can be done easier.

293. 36-Hu-1: Artifacts; a variety of corded materials.

294. 36-Hu-1: Feature; Feature 12 in W45-S10 and 15 bark lining in level 12.

295. 36-Hu-1: Artifact; turtle shells in situ.

296. 36-Hu-1: Lab work; field workers assorting artifacts on trays.

297. 36-Hu-1: Artifacts; potsherds.

298. 36-Hu-1: Lab work; a view of the cataloging tables.

299. 36-Hu-1: Panoramic; view of the surrounding countryside taken from above the cliff above Sheep Rock.

300. 36-Hu-1: Transportation; the field workers on their way to or from the site.

301. 36-Hu-1: Panoramic; view of Sheep Rock taken from the river looking NE toward the site.

302. 36-Hu-1: Panoramic; view of the surrounding countryside taken from the cliff above Sheep Rock.

303. 36-Hu-1: Field work; a view of three screens in operation with two people at each screen, looking W.

304. 36-Hu-1: Field work; photo of the site looking south across the site.

305. 36-Hu-1: Field work; field worker excavating in his square.

306. 36-Hu-1: Field work; Dr. Kovar and field workers taking soil samples for pollen analysis.

307. 36-Hu-1: Field work; two field workers excavating a bark pit or basket of some kind.

308. 36-Hu-1: Field work; view of site showing people excavating, looking toward the S.

309. 36-Hu-1: Transportation; loading the boat heading for Sheep Rock.

310. 36-Hu-1: Recreation; students taking their afternoon break for a swim.

# NOTES ON THE ARTIFACT CATALOGUE FOR SHEEP ROCK

by

Philip Kilbride

## ACKNOWLEDGMENTS

On behalf of Dr. Michels who voiced the need for having the field catalogue transcribed on punch cards I sincerely acknowledge the many hours of key punch machine operation performed by John Azer, Pamela Azer, Susan Kovak, Donald Austin, and Bernard Wydra.

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## THE FIELD CATALOGUE

All materials recovered from the Sheep Rock shelter site were described in a field catalogue. The field catalogue lists the museum accession number for the collection, the individual artifact numbers, the name of the collector, the name of the recorder, and the date of cataloging. In addition, it lists the excavation pit, vertical depth or stratigraphic level, nature of the material, kind of object, and the number of pieces represented. Finally, it provides space for any notations regarding feature associations. All specimens from all seven seasons of excavation were catalogued in this manner during the 1966 field season. The resulting field catalogue is 443 pages long, and contains 6940 line entries.

## THE IBM MACHINE PUNCH CARD CATALOGUE

To facilitate manipulation of the data contained within the field catalogue, all entries were transcribed onto IBM machine punch cards at the Data Processing Center of the Pennsylvania State University. Table 1 summarizes the column assignments of the coding system. Coding fields were established on the basis of the various kinds of data recorded in the field catalogue. One additional designation, that of a number code for specimen material, was introduced to allow for more efficient machine sorting. Figure 1 illustrates column assignments as they appear on the card form layout sheet. A single punch card stores all fields of information for a single line entry on the field catalogue. As a result, the catalogue punch card deck contains 6940 cards.

Table 2 illustrates the total range of information contained in Field 2 and Field 3 (see Table 1). The first column of Table 2 indicates the code numbers assigned to various categories of recoverable material. In the second column of Table 2 the categories of recoverable material are listed. The third column of Table 2, "type of object," specifically classifies recoverable materials into descriptive and/or functional types. These types, as they now stand, reflect the modest level of control over artifact classification that characterized our initial season of excavation at Sheep Rock. As analysis of the artifacts proceeds, a continually greater level of typological specificity will be incorporated into the cataloging program.

On the basis of this past year's work, many of the recoverable material categories will be typologically broken down in greater detail during cataloging operations this coming season. Other categories, however, will show no change, owing to the fact that the laboratory analysis of that material has not yet progressed far enough. Stone and clay categories will have rather detailed object typologies as a result of laboratory analysis completed during the past year. Wood, bone, shell, feather and fur, however, will be catalogued with the same lack of specificity as last season. The category "dung" will be merged with the category "coprolite," and an effort to recover only human coprolites will be made. A laboratory analysis of the presently catalogued coprolite and dung materials will be undertaken this summer. The object of the analysis will be to obtain information on the diet of the Sheep Rock inhabitants.

The categories "vegetable" and "miscellaneous organic" will be reconstructed so as to conform with the needs of Anton Kovar, who will analyze all macro-botanical specimens recovered. It will be one of the major projects of this summer's field school. The categories "fossil," "nest," "leather," and "fish scales" will not be changed, due to the lack of adequate analysis. The category "fiber" will be further broken down into object types as a result of the progress already made in analyzing that material.

The IBM machine punch card catalogue has already proved a great aid in data analysis. The ability to duplicate all or any part of the catalogue, and to sort and retrieve specific artifact inventories, have made the catalogue a far more critical research tool than it ever could be in the past.

Table 1

A SUMMARY OF COLUMN ASSIGNMENTS
SHEEP ROCK SHELTER ARTIFACT CATALOGUE
CODING FORM

| Field | Column | Sub-Column | Designation |
|---|---|---|---|
| 1 | 1-40 | | artifact provenience identification |
| | | 1- 6 | state museum accession number |
| | | 7-11 | field catalogue number |
| | | 15-20 | pit designation |
| | | 25-33 | vertical provenience |
| 2 | 41-63 | | recoverable material |
| | | 41-42 | number code for specimen material |
| | | 44-63 | name of material |
| 3 | 64-77 | | object type |
| 4 | 78-80 | | number of items |

Table 2

A SUMMARY OF CODING FORM FIELDS 2 and 3

| Code Number | Specimen Material | Type of Object |
|---|---|---|
| 1 | stone | modified<br>unmodified |
| 2 | bone | modified<br>unmodified<br>human |
| 3 | shell | modified<br>unmodified |
| 4 | clay | pipe<br>pottery |
| 5 | charcoal | charcoal |
| 6 | wood | modified<br>unmodified<br>bark |
| 7 | dung | dung |
| 8 | fish scales | fish scales |
| 9 | fur | fur |
| 10 | feather | feather |
| 11 | vegetable | seeds<br>nuts<br>gourd<br>corn (husk, cob)<br>nuts and seeds |
| 12 | fiber | fabric<br>cordage |
| 13 | leather | leather |
| 14 | vegetable modified | (describe) |
| 15 | nest | nest |
| 16 | miscellaneous organic | grass<br>reeds<br>leaves<br>shredded matter<br>(etc. specify) |
| 17 | coprolite | coprolite |
| 18 | fossil | unmodified |

PSU

# CARD FORM LAYOUT

| FIELD 1 ARTIFACT PROVENIENCE IDENTIFICATION | | | | | | | FIELD 2 RECOVERABLE MATERIAL | | | FIELD 3 OBJECT TYPE | F.4 N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01–06 | 07–11 | 12–14 | 15–20 | 21–24 | 25–33 | 34–40 | 41–42 | 43 | 44–63 | 64–77 | 78–80 |
| A66. 1 | 2061 | | E15S15 | | 35T040 I | | 11 | | VEGETABLE | SEEDS | 8 |

Figure 1

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